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THIRTY-EIGHTH MEETING OF THE
OIL SHALE ENVIRONMENTAL ADVISORY PANEL
Grand Junction, Colorado
October 26 and 27, 1983

PANEL MEMBERS AND INTERIOR OFFICIALS

Henry O. Ash, Chairman
Steven Gottlieb, U.S. Synthetic Fuels Corporation, Washington, D.C.
Bob Lawton, Assistant Director, Bureau of Land Management
Don C. Alvord, BLM, Vernal
Harold M. Boeker, U.S. Fish and Wildlife Service, Denver
Mark Bubriski, Development Director, Rio Blanco County, Meeker
Lee Carie, BLM, Craig
John R. Donnell, Denver, Colorado
Bob Elderkin, BLM, Oil Shale Project Office, Grand Junction
Paul Ferraro, Colorado Department of Health, Denver
Carter B. Gibbs, USDA, Forest Service, Ogden
Wallace R. Hansen, U.S. Geological Survey, Denver
Patricia Keyes, U.S. Department of Transportation, Denver and Kansas City
Regions
Paul Kilburn, Golden
Bob Leopold, BLM, Denver
Lowell Madsen, Solicitor's Office, Denver
Robert Nicholson, Uintah County, Vernal
Dennis Stranger, Garfield County, Glenwood Springs
Larry Svoboda, EPA, Denver
Steve Utter, Bureau of Mines, Denver
Clarke Watson, Industry/Energy, Denver
Dewitt, John, State of Colorado

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U.S. DEPARTMENT OF
ENERGY
WASHINGTON, D.C. 20585
JAN 10 1980

LIST OF ATTENDEES

Federal Agencies:

Bureau of Land Management

Betsy Allen, Craig
Jean Czarnecki, Grand Junction
Dick Freel, Grand Junction
Randy Heuser, Grand Junction
Don Johnson, Grand Junction
Glen Miller, Grand Junction
Wright Sheldon, Grand Junction
Curt Smith, Meeker
Lee Stevens, Grand Junction
Jim Rush, Grand Junction

Environmental Protection Agency Region VIII, Denver

Paul Osborne

U. S. Department of Energy, Grand Junction

Joe Virgona

U. S. Fish and Wildlife Service, Grand Junction

Rick Krueger

Industry:

ARGEE Corporation, Grand Junction

Suzanne Stewart

Cathedral Bluffs Shale Oil Project, Grand Junction

Ed Baker
George Fosdick

Lummus Company, Bloomfield, NJ

R. F. Jortberg

Oxy Oil Shale, Inc., Grand Junction

Marney Talbert

Rio Blanco Oil Shale Company, Aurora

Dick Lieber
Howard Earnest
H. M. Trebus
Larry Weiner
Butch Slawson

Science Applications, Inc., Golden

Kanaan Hanna

Shell Oil Company, Denver

A. T. Ireson

Standard Oil Company of Indiana, Chicago

Paul Garvin

VTN, Grand Junction

Swain Munson

Western Engineers, Inc., Grand Junction

B. R. Rose

White River Oil Shale Project, Salt Lake City

Jim Godlove

Media:

J. Sullivan, Daily Sentinel, Grand Junction
Mark Thompson, KQK Radio, Grand Junction

Others:

Jim Hager, Grand Junction
Dave Oberwager, Grand Junction
Harry Pforzheimer, Grand Junction

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Hilton Hotel
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Wednesday, October 26

Meeting called to order at 1 p.m. by Henry O. Ash, Chairman

MR. ASH: I would like to convene this thirty-eighth meeting of the Interior Department Oil Shale Environmental Advisory Panel. This is our first meeting in Grand Junction in a while. We are pleased to see the changes that have taken place, especially the new Air Terminal which was financed in part by funds from the Oil Shale Trust Fund. We are also pleased to be meeting in this fine new facility, the Grand Junction Hilton. I observed earlier that I am not sure the Panel will be content to meet in the Vernal Elks Club in the future after meeting in these surroundings.

As you all know, with the exception of a couple of projects, the oil shale development activity and the enthusiasm for it have been at a rather low level, at least compared to a couple of years ago. At our last meeting in Denver, which was in March, we noted several prospective developments which could affect that level as well as the activities of the Panel. It seems we still remain in a state of anticipation of the following: The startup of Union Oil, the first major shale oil production in this part of the country, a Synthetic Fuels Corporation decision on support of one or more oil shale projects, a decision on the offering of an additional prototype oil shale lease by BLM, and also completion of the development of the proposed permanent oil shale program. We will hear, I think, on every one of these matters during this meeting.

I would note some changes. At our last meeting the Oil Shale Office in Grand Junction was represented by Eric Hoffman. Eric has transferred to the BLM State Office in Oregon, and Bob Elderkin is Acting Chief of the Oil Shale Office. We are glad to have Bob here, but we are going to miss Eric and all his fine efforts and assistance he has given to the Panel in the past.

We have a new public panel member recently appointed by the Secretary of the Interior, and I would like to introduce Paul Kilburn to you. We are glad to have you here, Paul, and welcome you to the Panel.

Our usual custom has been to have the Panel members introduce themselves and identify their affiliation or agency, and if you are sitting in for someone, please let us know. Let's do that now and start down there at that end.
Dennis.

Dennis Stranger, sitting in for Flaven Cerise, Garfield County
Hal Boeker, Fish and Wildlife Service
Bob Nicholson, Planning Director for Vernal City and Uintah County, sitting
in for Neal Domgaard, Chairman of Uintah County Commission

Paul Ferraro, Colorado Department of Health
Carter Gibbs, USDA, Forest Service, Ogden, Utah
John Donnell, Public Member
Don Alvord, Bureau of Land Management, Vernal District Office
Lee Carie, BLM, Craig District Manager
Bob Elderkin, Acting Project Manager for the Oil Shale Office
Paul Kilburn, Public Member
Wallace Hansen, U.S. Geological Survey, Denver
Steve Utter, Bureau of Mines, Denver
Clarke Watson, Public Member
Lowell Madsen, Solicitor's Office, Department of Interior
Bob Leopold, BLM, Denver
Larry Svoboda, Environmental Protection Agency in Denver
Patricia Keyes, U.S. Department of Transportation
Mark Bubriski, Rio Blanco County Development Director

MR. ASH: Thank you. In the six months or so since our last meeting we have continued our paper blizzard, through perhaps not as heavy as it has been sometimes in the past. We have had a total of seven mailings, mailing out about 21 different items. We have distributed today another half a dozen or so, which include an update of the roster of the Panel, and we would solicit the members and alternates for their corrections to this latest version of the roster. It is always out of date as soon as we get it retyped. We would like to keep it as current as possible.

There is also a list of our workgroup structure and I would also solicit tomorrow your comments on that and thoughts on your own membership on different workgroups.

Several of the other items we have distributed relate to the proposed off-tract activities of Rio Blanco Oil Shale Company, and I've also included a copy of the statutory language which authorizes or provides the Department the authority to lease Rio Blanco a 6400-acre off-tract site. In September I visited the White River Project and saw firsthand the development which was just about to begin when we visited there about a year ago. The whole Panel was there at that time, and the progress there is certainly impressive. I also attended the Regional Oil Shale Team meeting in Vernal last month, which was mainly addressing the resource management plans for the oil shale areas in Colorado and in Utah.

I want to mention our trusty executive assistant, Elanor David, before we go on. Elanor was hospitalized for two weeks and it was for what turned out to be a slight stroke, caused by a wandering bloodclot, source and cause unknown. She's making a very good recovery, the prognosis is for complete recovery and return to the office, but I couldn't say just when that would be. Perhaps before the meeting is over we can circulate a card for her so that the members can sign, and any others that know her and would like to. I would comment that it has been interesting to say the least to try to put this meeting together in Elanor's absence. I've learned a whole lot about details such as requisitions and reservations and such like. I hope that we don't have any disasters as a result of anything that I may have overlooked.

Our first agenda item is, as usual, reports from the Interior officials, those whom we advise, and we'll start with Lee Carie, District Manager for BLM in Craig, Colorado. Lee.

MR. CARIE: Thank you, Hank. I'd like to introduce Betsy Allen, who is the Chief, Branch of Solids on the Craig District Staff, sitting in the back of the room. On her staff will be the responsibility for quite a bit of the oil shale work performed by the Craig District. We also have Curt Smith, the Area Manager of the White River Resource Area located in Meeker sitting over here, and we will be hearing from Curt in a few minutes.

Even though industry is not producing much oil shale, BLM is producing quite a bit of paper, especially my district. Some of the main items we are working on now is the Land Use Plan for the Piceance Basin, we call it the RMP, Resource Management Plan, and in a minute or two Curt will say a few words on that.

We are also doing the environmental work necessary to issue a lease to the Rio Blanco Oil Shale Company for off-site disposal of spent shale and siting facilities, and Curt is also going to help me on that.

Another interesting item is the recent transfer of the Oil Shale Projects Office, the jurisdiction of that office, to the Craig District Office, and that's going to help, I think, quite a bit in coordination and implementing some of the programs we had going which were outside the lease tracts. It will also help, I think, the coordination of activities on the lease tracts.

In addition to the off-site lease, the C-a off-site lease, the Rio Blanco Oil Shale Company has submitted an exchange application for about 2200 acres of public land for roughly a like amount of fee-owned land in the Piceance Basin. This proposed exchange land is contiguous with both tract C-a and the off-site lease application. I think, Hank, that brings us up on the important oil shale issues facing our district.

MR. ASH: Comments or questions for Lee? Don Alvord is sitting in for Lloyd Ferguson, BLM District Manager in Vernal. Don.

MR. ALVORD: Being something of a novice with the Bureau of Land Management's considerations, I'm not going to say very much, but most of our concerns at this time are with surface management in the vicinity. Dean Evans, our Area Manager for the Bookcliffs Resource Area, he is the person that you would contact if you had any immediate concerns in that area of effort. The activities in our area will not perhaps be addressed by the people discussing the mining operations themselves, but involve the fact that we have four state exchanges under way, all being scheduled on a priority basis. The specific entities involved are not critical I wouldn't think. They involve state land in exchange for Federal lands. Some of the land the companies have had under lease from the State for a considerable length of time in most cases. We have a Resource Management Plan underway which scopes the areas that will be impacted by both oil shale and tar sand activities. It's all on schedule, the draft would be due about the end of March and the final report about the first of September. We think we'll make those deadlines.

We have a powerline right-of-way application, two of them, which coincide with the same route into the U-a U-b area, which is a proposal to furnish power to the White River Oil Shale Corporation's operations on those tracts. It happens that this proposal for a right-of-way coincides with much of the analysis that we completed already. The Uintah Basin Synfuels EIS analysis covers about 85 percent of the proposal. The remaining 15 percent is undergoing analysis by the White River Oil Shale Corporation at this time, and should be in shape that we could make a decision before the end of the current calendar year. We also have an offtract application to move one stream gaging station, which was not significant by most any standard. Of course we have some activity in the area such as Geokinetics which is not of direct concern but is of considerable interest since they do keep plugging along. Thank you.

MR. ASH: Thank you, Don. Questions or comments for Don? If not then we will turn to Bob Elderkin, the Acting Chief of the Oil Shale Office here in Grand Junction. Bob.

MR. ELDERKIN: Thank you. We have completed our portion of the writeup for the Tar Sands Triangle EIRS. It is undergoing final editing right now, and is scheduled to be completed by November 10. It will then go to the printers and is projected to be on the street early in December. We also completed the Quintana land exchange this past summer. This was the first land exchange that has been completed involving oil shale. Title has been transferred and the procedure that we developed for this exchange has been approved by the Utah State Director for use on the four additional land exchanges that Don mentioned. We have also completed the tract evaluation for C-11 this past year, and these results were forwarded on to Washington. This evaluation is to determine the minimum acceptable bid when this tract is put up for sale.

Rio Blanco Oil Shale Company submitted their retort management plan which we have in turn submitted to the Panel for their review and advice on its acceptability. The Synfuels Corporation submitted their monitoring guidelines to us for review and we completed that review and have sent back to them. Staff members also completed two technical papers this last summer. These were "Let's Mine Thick Oil Shale" by John Miley. This paper has been accepted for publication in the Mining Journal. The second paper is "Federal Prototype Oil Shale Program, an Environmental Sampling Approach" which was written by Don Dietz and Roger Tucker of our office. Thank you.

MR. ASH: Comments or questions for Bob? Larry.

MR. SVOBODA: Yes, I have one. Bob, could you summarize quickly what was involved in the Quintana land exchange? I'm not familiar with that issue.

MR. ELDERKIN: I would rather let Jim Rush from my office or Randy Heuser, whoever would prefer, who actually did it, to summarize that. Step up Jim, you're the closest.

MR. RUSH: My name is Jim Rush. I'm a geologist with the Bureau of Land Management's Oil Shale Projects Office. At the request of the Utah State

Director we applied some land exchange guidelines that were developed at the policy level in Washington, D.C., by the Bureau of Land Management to, I think it was about 6600 acres of offered land and about 5700 acres of selected land in the State of Utah. This involved a geological analysis in conjunction with Don Alvord's staff, a mining analysis and report and an economic evaluation to determine relative values between offered lands and selected lands.

MR. SVOBODA: Thank you.

MR. ASH: Any other comments or questions for Bob? Lee, did you have something?

MR. CARIE: Yes. If the Panel wishes I can expand a little further on this C-a off-site application we have and also the Resource Management Plan we're doing in the Piceance Basin. Curt is prepared to speak a few minutes if the Panel so wishes.

MR. ASH: Yes, I think it would be a good idea, really, to kind of put it in context. The Panel, of course, has received a copy of the proposal for the off-tract lease. I have seen the other, the proposed exchange, the Panel has not seen that yet, so I think it is excellent if you would do that now.

MR. CURT SMITH: Area Manager for Meeker, Craig District. What I will do first is just go through the schedule on the RMP and where we're at, and when we anticipate completion. Right now we're working on the environmental consequences for the RMP, we're expecting to have a preliminary draft RMP out by the end of December with the draft RMP available to the public on the 16th of February, and at that time there will be a 90-day comment period for the public and other concerned agencies and citizens. During that 90-day period we will also have a meeting with the Regional Oil Shale Team to address their comments and concerns. Following the public comment period we will go in and of course address the comments and concerns with the final RMP available to the public on the 15th of August, with hopefully approved RMP on the 30th of October.

Now on the C-a off-site lease, we are proposing to have a draft available to the public by the end of December, with a 17- to 20- or 30-day comment period by the public, and that of course will come back to us to address those concerns. The final will be out the week of the 22nd of February, with the determination to proceed or not to proceed by May 4.

As far as the land exchange, Hank, we have just received that in the office and are now analyzing our approach upon that. Right now it is my understanding that we are still figuring on proceeding with two separate documents, keeping both actions completely separate from each other.

MR. ASH: And this is the EA you're talking about, the schedule you gave?

MR. SMITH: That's correct for the off-site lease.

MR. ASH: The Environmental Assessment, right. Maybe not everybody knows what an EA is. Thank you. John Donnell.

MR. DONNELL: Could I inquire as to what acreage is involved in this exchange?

MR. CARIE: The figures that we are speaking of in rounded terms, they are offering about 2700 acres and asking a little over 2200 acres.

MR. DONNELL: Could we get a rough designation of where the acres are, not in detail, this would probably be kind of difficult.

MR. SMITH: C-a will show this on a map in their presentation.

MR. ASH: Clarke.

MR. WATSON: I guess you probably can answer this. Are the right steps being followed in the proper sequence on this exchange? Is everything plugged in that's supposed to be there, or is there something that is going to come leaping out at a later time and cause some consternation?

MR. CARIE: We hope we are touching all bases. We've had the application a couple of weeks and we've already proceeded on the C-a off-site lease environmental analysis. This has given us something else to think about, how we are going to actually do the NEPA compliance and the other realty actions on the exchange proposal. We haven't decided yet. There's any number of alternatives. We could separate environmental documents on each one, we could combine them perhaps. We just haven't really analyzed all the ways of doing the NEPA compliance on the two actions.

MR. ASH: Thank you, Lee and Curt, and Don and Bob and all the gang. We will review the status of the three prototype projects and we have in the past usually gone from a to b and then U-a and U-b, that is C-a, C-b, then U-a and U-b. We're reversing the procedure now and going to start with White River, the U-a U-b tract project in Utah, and I believe Jim Godlove is probably leading off on this. Jim.

MR. GODLOVE: Thank you, Hank. It is indeed a pleasure to be here today to discuss with the Panel the status of construction on the White River Shale Project. Basically my presentation today is going to be divided up into two sections. First of all, we will discuss the current project schedule and discuss some of the more significant construction activities taking place on site these days, and secondly we'll go through some slides showing the present status of construction on the various components of our mine phase development of the project.

Proceeding first with a discussion of the White River Shale Project schedule, the schedule shown on this slide is limited solely to the development plans for Phase 1 of the White River Shale Project. Just as a reminder of what this involves, it is the development of a 27,000-tons per day underground room-and-pillar mining operation and a surface retorting operation involving two Union B surface retorts producing approximately 16,500 barrels per day of upgraded shale oil at the project site. Now this material would then be pipelined from the project site to markets off-site. In the area of environmental permitting

and approval, to date White River has obtained approximately 101 permits for the mine development phase of the project. This has involved about 10 man-years of effort on the part of White River and its permitting consultants to date. Now the plan is that by mid-1985 we will receive the additional major permits for the project and there are about 30 major permits left for the project to obtain. This will require an additional 5 man-years of effort on our part.

In the area of monitoring, White River is continuing with its ambient monitoring program under the terms of the prototype lease. This includes six disciplines, air, water, terrestrial fauna, vegetation, aquatic biology, and reclamation research. We do not anticipate any significant change in that level of monitoring under this project development schedule. One of the more interesting things that we have determined this year is that following our years of intensive construction there have been no identified adverse impacts as a result of our current construction schedule. We have noticed, however, during this period of time that the level of raptor activity on and near to the tracts has increased to the highest level in the last 9 years of recorded monitoring. We've identified 69 raptor nests on tract and within a 2-km radius of the tracts. Of this total, 29 nests are located on tract, and of those 29 we've got about 10 active.

Continuing with the discussion of monitoring, White River has prepared source and health and safety monitoring program outlines following the guidelines published by the U.S. Synthetic Fuels Corporation. These outlines that White River has developed are now under review by the SFC and its various consulting agencies, and the Panel has also received copies of both of these outlines and we would be glad to receive any comments that you have on those outlines today. Our plan is to finalize the outlines before the end of the year and obtain approval of our outlines from the Synthetic Fuels Corporation. However, the program described within these outlines will not be implemented until the project actually commences production of shale oil in the '88-89 timeframe.

In the area of water development, I think it's important to note that the State of Utah has segregated 3,000 acre-feet of water from their 250,000-acre-foot water right application on the White River. This segregation has been approved by the State Engineer. Subsequent to that segregation the White River Shale Oil Corporation signed a purchase agreement with the Utah Division of Water Resources for the purchase of that 3,000 acre-feet of water. What this does is provide sufficient water for the operation of the Phase 1 facility at White River. This contemplates the eventual construction of the White River Dam, although this water could be withdrawn from the river through the use of alluvial wells. White River is continuing its negotiations with the State of Utah, however, on a final water agreement, a purchase agreement for water from the White River Reservoir.

In a related matter concerning water issues, White River recently published a water supply alternative study that was prepared for White River by Bingham Engineering of Salt Lake City. Basically, this report showed that there are sufficient water rights and sufficient water quantities available within the White River for all three phases of development on the project. Consequently,

we have a very high level of confidence that sufficient water is available for the total future development of this project.

One other matter related to water development. As you know, White River has constructed alluvial wells on the White River which do provide water to the current phase of development on the project. There was a substantial amount of erosion beginning to take place near those alluvial wells. Consequently last winter we underwent a bank stabilization project under the Nationwide 404 Permitting Program. As a result of the high river levels through much of the summer, the erosional pattern of the White River has totally reversed itself. Consequently our present bank stabilization is not really adequate to protect the alluvial wells. Consequently we have filed a 404 permit application with the Corps of Engineers to extend the bank stabilization an additional 500 feet and I'll show you a slide of that in a moment.

In the area of socioeconomics, White River has published a cost/revenue study as shown on this slide. The study was sent to the Uintah County Community Impact Council for review. The study basically analyzes the timing of public need in the area caused by our project versus the availability of tax revenues generated by the project itself to address those social needs. We have had numerous discussions with the Council and various Council members up to this point in time. We have just recently received comments and what I term a needs list from the Impact Council. We are at this time reviewing the needs list within White River and anticipate responding to the Council and basically beginning the negotiation stage very shortly. In this regard, much as we're finding in the environmental monitoring area we really have not identified any adverse impacts as a result of our present level of construction on site. Our maximum workforce to date has peaked at about 190 individuals on site, and our present workforce is about 150 and moving down. Approximately 96 percent of this workforce now resides in the State of Utah.

Concerning the engineering on the project, White River has completed a definitive cost estimate for the Phase 1 mining operation. We did prepare a feasibility study as a part or to support the Financial Assistance application pending with the U.S. Synthetic Fuels Corporation concerning the project, we are at this time updating the feasibility study to provide an ATE quality cost estimate for Phase 1 of the project. This will also provide us a very good handle on what the costs should be for Phase 2, which is really the first commercial phase of the project. According to our present schedule, we anticipate getting approval to proceed with definitive engineering on Phase 1 of the project in mid-1984, with the final cost estimate at that definitive level, engineering estimate, by mid-1985.

At this point I think it might be advantageous to mention the current status of the owner's application with the U.S. Synthetic Fuels Corporation. As I mentioned, this is an application sponsored by the three owners of the White River Shale Project, Phillips, Sun, and Sohio. However, it does address the total White River Shale Project. The project is now an active candidate under the Third Solicitation of the Corporation. The sponsors made a presentation to the Board of Directors of the SFC in Phoenix last Friday. However, to date there

have been no announcements concerning any award of financial assistance to the project. We do hope for a final decision from the SFC concerning financial assistance for White River before the end of this year.

Now concerning mine development, I'd really like to defer any significant discussion of this until later on in the presentation when we'll actually be going through some of the slides, and I'll discuss exactly where we are on our mine development phase. As far as surface facilities construction is concerned, we are essentially complete with the development of the infrastructure for the mine development phase of the project. As this slide would indicate, we intend to begin construction of the surface facilities in late 1985, and leading to startups of the first retort in late '88 and the second would be by mid-1989. One other item that's important to mention on this slide is that of permanent power which shows a construction line during the first half of 1984. As Don mentioned earlier in the presentation today, White River and Utah Power and Light Company have both filed right-of-way applications with the BLM to provide a 138-kv line into the White River Shale Project. Basically the route that that line would follow is as Don mentioned, essentially within the routing identified in the Uintah Basin Synfuels EIS project. What it involves is the construction of about a 13-mile power line from just south of the Bonanza Powerplant into Asphalt Wash just west of the tract. White River would then build a powerline from that terminal point in Asphalt Wash into the plant site. It is anticipated, or at least there's a possibility that an additional powerline may also have to be built from the Vernal Substation of UP&L down to just south of the Bonanza Powerplant although the decisions concerning that line have not been made at this point in time. It is anticipated that this permanent power would be available sometime in mid-1984.

Now, briefly, I would like to go through some slides of our current construction activities at the White River Shale Project. As this slide would indicate, we are making some level of progress at developing our project from what it used to be to what we anticipate it will be a few years hence. One of the first things that was important to do was to improve the access to the site, and the access has indeed been improved over the last couple of years. This is a shot of the energy highway extending from Vernal to just north of the community of Bonanza. This road was paid for in partnership, almost equal partners, by the State of Utah, Uintah County, and the Deseret Generation and Transmission Cooperative who are building the Bonanza Powerplant north of the community of Bonanza. It is about a 30-mile highway, involves a new bridge across the Green River, which is shown on this slide. Those of the Panel who were out in the Uintah Basin a year ago in September have traveled along much of this new road.

One of the things you didn't get to travel on was the new road that White River has constructed south of Bonanza into our plant site. This involves the construction of approximately 7 miles of new highway and it was funded entirely by the White River Shale Project owners. As you can see from this slide, some of the construction constraints were quite monumental in the construction of this road. This cut is approximately 75 feet through solid rock.

One of the significant elements of this new access into White River Shale is construction of a new bridge across the White River. The span of this bridge,

the open span of the bridge, is approximately 600 feet. Now the funding of this bridge came primarily from the State of Utah's Board of Water Resources, although White River did contribute some funds toward the construction of this bridge, and it was really the final link in opening the project to the rest of the Uintah Basin. As this slide would indicate, access to the site has been markedly improved during the last year. This is a slide of the new highway into White River Shale, approximately a mile and a half from the plant entrance. The plant is actually located about three-quarters of a mile to the west of that prominent butte in the center of the slide, which on this slide is about halfway between that butte and the right-hand corner of the slide.

As this slide would indicate, we are not dealing with a gulf coast location in the construction of the project. Those of the Panel who were out on site will probably remember this blast. At this point in time, we detonated about 15,000 pounds of explosives and moved about 30,000 yards of material. Basically what we were doing at the time of this blast was preparing the surface area where the air intake ventilation shafts and service shafts would eventually be constructed. In advance of any sort of significant site development, White River has diligently tried to recover and stockpile as much topsoil-like material as possible. To date White River has recovered into three long-term storage stockpiles approximately 170,000 cubic yards of topsoil. This is a shot of one of the three long-term stockpiles. At the time this slide was taken this one had about 100,000 cubic yards of topsoil located in it. Each of these topsoil stockpiles has been revegetated and we are in the process of monitoring the success of revegetation on these stockpiles. I might mention at this time that the total disturbance at the project within the mining area is limited to about 155 acres at this point in time.

Now to give you some feel for some of the progress in construction at the site, this is the early construction activity taking place on the mine services building. This slide was taken about October of last year, which is just about the time the Panel was out on tract. The mine services building has now been completed. It involved a structure of some 27,000 square feet in area. Eventually the building will be three times this size as we add truck service bays and equipment service bays on each side of the warehouse area. As you can see from the slide, the building incorporates office facilities in front and a fairly large warehousing operation in the rear. Eventually this building will serve for the mine administration operations of the project. Currently it is providing housing of the total administrative functions for the project. White River has installed microwave telecommunications facilities at the site. This is a shot of our microwave system. It involves relaying a signal from the site to a receiver on Blue Mountain to the east of Vernal, and subsequently is transmitted into White River's Vernal office, where it is hardwired into the Bell system. At this point in time we have the capacity of installing 96 separate lines on this telephone system.

As I mentioned earlier, White River has installed alluvial wells to provide water to our current construction phase of the project. We now can deliver up to about 300 gpm of water, although we're using only about one-tenth of that at this point in time. Also, as I mentioned earlier, White River has also been

involved in a bank stabilization project and this slide shows both the native rocks used as riprap along the White River and also it is evidence of what happened during this last summer. Originally all of that riprap had been placed upon the bank of the White River. Subsequently this summer, instead of the river eroding to the right on this slide or to the southeast, the erosional path of the river has now moved back to the northwest; consequently it is beginning to erode the opposite side of the river, and has begun a bank-building operation adjacent to the riprap. Consequently, what White River is proposing to do and the Corps of Engineers is presently reviewing, is to extend this riprap on the left side of the slide an additional 500 feet. Now what you see here is about 500 feet of riprap placed last winter, and it indeed was very successful. We had absolutely no problems with additional erosion in this area of the river, and the White River flows this year are the second highest on record.

Water from our alluvial wells is treated on site in a water treatment facility and this is a shot of the site development at the site of our water treatment plant. That plant has now been completed, as shown in this slide. It consists of a raw water storage tank, a fresh water storage tank, a building which houses the treatment facility, and the fenced area behind the building is a sludge settling pond where the sediment from the river water is disposed.

This is a shot of the flocculation and filtration facilities inside the water treatment facility. It is a relatively standard package water treatment operation.

In addition to water treating facilities, White River has also installed a wastewater treating facility as well. In the center of this slide is an effluent holding pond under construction, and to the left of that pond is the future site of the wastewater treating facility. Those facilities have now been installed. You can see the effluent holding pond has been completed and the wastewater treating facilities have been installed. The structure in the foreground is the headframe over the air intake ventilation shaft, which we'll discuss in just a minute.

Over this near-term ridge and before you get to the other side that's Southam Canyon for those of you who have not been on site. That's the area where when we move into Phases 2 and 3, processed shale will be disposed of in Southam Canyon.

This is a little closer shot of the wastewater treating facilities. It is a tertiary treatment plant, it involves primary clarification, biological treatment in a rotating biological contactor. This is followed by secondary clarification and chlorination and then subsequent to that we also have a tertiary sand filter. The effluent from this plant will exceed the safe standards allowing reuse of this treated domestic wastewater. This plant will service only effluent from the mine services building.

As I mentioned earlier. White River will be in the process of installing permanent power to our site for the eventual operation of the project. The building to the right center of this slide is the electrical substation building

and all of the switchgear located inside of that building is shown in this slide. While all of the necessary facilities are there really to bring power into the site, what we're lacking is about 17 miles of powerline, which we hope to have installed by the middle of next year.

One of the major environmental structures constructed at White River during the last year has been the construction of a runoff holding pond, runoff retention pond, which will capture all contaminated surface runoff and any sort of leachate that may originate within the processing plant area of the site. Now the processing plant itself is located within an 850-acre canyon that all drains down to this area. We basically had two options in the construction of this reservoir and dam. We could either build the dam and line the reservoir or we could build the dam to be relatively impervious. We chose the latter of those two options. The construction of the dam involved an excavation of a core trench which is shown in this slide, it was taken last winter, obviously. At this point in time the core trench has been excavated about 30 feet into competent bedrock. A grout curtain was installed up to 60 feet below the core trench in order to prevent any percolation of leachate underneath the dam itself. Inside the core trench White River used a clay material which was compacted to relatively impermeable density. This slide shows the placement and the compaction of that core material in the center of the dam. You can also see in this slide, particularly on the far bank, the shotcrete that was placed upon all the sides of the reservoir in order to create a good union between the clay and the competent rock.

This is a shot of the completed reservoir. It was completed about a month ago. The reservoir itself has a capacity to hold a 100-year, 24-hour rainfall event. Now that calculates out to about 160-acre-feet of water. We also designed capacity to hold any accumulated sediments as well. Now the final capacity of the reservoir created by this dam is 288 acre-feet. Consequently we can hold much in excess of the 100-year storm. We do not anticipate having discharges from this facility except under the most unusual condition. You can see in the foreground of this facility the spillway structure itself, just in case the water level in the reservoir did get to dangerously high levels. The little pond below the runoff retention dam is a seepage collection pond. Should any water seep through the dam core itself, it would be collected in this seepage collection pond and returned to the major pond itself. White River also installed a series of seven ground-water monitoring wells below the runoff retention dam. The purpose of these wells is to intercept any ground water flowing under, around, or through the grout curtain. Each one of these wells involves a multiple completion. One of them has up to four different zones that can be monitored, and the Branch of Oil Shale participated very intensely in the development of this monitoring program, and I think all of us feel very comfortable with White River's ability to detect any sort of leachate that might attempt to pass below the dam itself.

The next thing I'd like to discuss is just to bring you up to date on where we stand on our mine development plan. Essentially all construction at White River is complete for our present level of development, with the exception of the underground development. As this slide would indicate, these are the current

mine development activities that are underway. It involves the production decline and a vertical air intake ventilation shaft. The upper leg of the production decline which is shown as a slanted line on the right-hand side of the drawing has dimensions of 12 feet in height and 28 feet in width. The lower leg of the decline will be 12 feet in height and 18 feet in width. The total length of the decline is just shy of a mile. The vertical air intake ventilation shaft is 30 feet in diameter and will be just a little in excess of 1,000 feet down to the ore body.

Now with that as a kind of a brief reminder of what we're doing at this time, I'd just like to go through a few slides of our construction activity to date. This slide shows the decline portal area which had been lined, drilled, and shot into competent rock on the surface at the plant site. Now White River is using a continuous miner. This machine is actually a Paurat road header machine, in the excavation of the decline. We've really been very pleased with the performance of the Paurat. It has handled and operated remarkably well, given the hard rock characteristics that it's been going through for the last 11 months or so. It does produce excellent ground control characteristics; consequently the decline is more like a highway tunnel than it is a blasted and shot tunnel that you see in some mining operations. This machine in this picture was new. It obviously isn't any more. The machine was nonpermissible under MSHA standards. It has now been totally rebuilt and has been classified as permissible by MSHA. Consequently on all subsequent excavations of the decline we will be using 100 percent permissible equipment, although no substantial gas concentrations have been detected within the excavation to date.

This is a present shot of the portal area showing the air exhaust line and the temporary conveying system that has been installed to handle all the muck out of the decline. This is an interior shot of the decline showing the ventilation system and the conveying system and all of the utilities on the lefthand side. The decline has been rockbolted, the back of the decline has been rockbolted and shotcreted fully, and there will be a concrete invert placed on the floor of the decline for its full depth.

This is a shot of the headframe which is a temporary construction headframe over the air intake ventilation shaft. Another shot of the headframe with the change house facilities directly below the headframe in this shot, and the hoisting operations which are all to the right of the headframe facility. All of the electricity for the operation of the hoist is being generated on site through diesel generation facilities.

And one final shot of the headframe taken from the mine services building looking north.

Basically to conclude this discussion of the current phase of mine development I'd just like to once again take you through this artist's conception and tell you exactly where we are. We'll start with the air intake ventilation shaft. The total depth of the air ventilation shaft will be 1,055 feet. The current excavation has reached 725 feet in depth. Basically that is almost entirely through that gray zone on this slide. Now the gray zone depicts the Birdsnest

Aquifer, which is the only significant aquifer that we'll penetrate during the sinking of any mine entry at the White River Shale Project. As you can see, the construction of the shaft is essentially through the Birdsnest Zone to date. We have been using conventional drill and blast methods. Basically that began with sinking at the ground surface, extending down to the top of the Birdsnest Zone, which was about 620 feet in depth. We then poured a concrete floor and grouted the full depth of the Birdsnest Zone for about 125 feet, and that carried the grout curtain about 10 to 15 feet below the bottom of the Birdsnest Zone. We used a 32-hole cover for this grouting operation. We then set up and began sinking once again down to a total depth of 680 feet, which is about 60 feet into the Birdsnest Zone. We then poured another floor and grouted once again using a 40-hole cover. Grouting, basically it showed very limited grout takes in the upper 60 feet of the Birdsnest Zone and quite large grout takes in about the bottom 30 feet of the Birdsnest Zone. The grouting program to date has been extremely successful, better than we ever imagined that it would be. As I mentioned, we are almost entirely through the Birdsnest Zone in the shaft. We're making about one gallon per minute in the unlined section of the shaft. That's really hardly enough to even measure. We do have about 5 to 10 feet left to go in the Birdsnest Zone. The shaft should bottom sometime in December of this year. At that time we'll then begin cutting the mining section and the ramp down to the secondary crushing station, which is the blue area in the lower left-hand side corner of this slide, and then begin excavating the secondary crusher room itself.

Now as far as the decline goes, the decline can be divided into three areas here, Decline A, Decline B, and Decline C. Decline A is the blue section from the surface extending down to the lower right-hand corner. Now that decline has a total linear length of 2035 feet. Construction of that portion of the decline is complete. It's kind of hard to see with the light on this slide but there's a little red runaround section of the decline which has a total linear length of 235 feet, and it has also been completed to date. We are working in Decline C, which is the tan section of the decline shown in the center of the slide. The decline at this point in time is holding at a depth of 521 linear feet, and we're grouting in the first of four setups of the grouting program through the Birdsnest Zone. The first grouting setup basically will carry the grout about 120 feet in advance of the sinking operation, basically following the plane of the decline itself. We are essentially complete with that initial stage of grouting. We should complete that within another week, and we will then bring the Paurat continuous miner back into the mine and all of the sinking through the Birdsnest Zone will be using the Paurat Miner. So we should have very good ground control during the construction of that section. We anticipate extremely large grout takes during the excavation of the decline. We have already used more grout in the first 120 feet of the decline which is a substantially smaller excavation than the ventilation shaft is, than we used in the entire grouting program for the ventilation shaft. This will be a very slow program although we don't anticipate any problems in being able to complete it, but it's going to take quite a bit of time. Basically, as I mentioned, we will proceed to grout the Birdsnest in a series of four setups and proceed to sink through it. We should bottom the decline in the second quarter of next year before the summer arrives. The total length of Decline C will be about 2300 feet, so as I men-

tioned, we are about 500 feet into it now, we've got about 1800 feet to go before we bottom the decline.

And one final slide. This basically - it's kind of hard to pick things out on this slide, but you have to be this far away in order to get everything in. Now this is a shot basically showing all of the items that have been constructed at the site to date, and I will try to point a few of them out. That's the portal for the production decline. The air intake ventilation shaft is located in this area and it's approximately 1,000 feet between that portal and that air intake ventilation shaft. The electrical substation facilities, the wastewater treatment facility is located there, the mine services building there, the water treating facilities are located in this general area. That is one of our three long-term topsoil stockpiles, that one has about 40,000 cubic yards of material in it at this time. This slide also shows you where the future processing plant will be located, it is in this canyon right here. The processed shale from that operation will basically follow this route out into Southam Canyon. This canyon, located in this area, will be used as a repository for fines which cannot be processed during Phase 1 of the project.

Well Hank, that completes my presentation on the project. I'll be glad to try to answer any questions at this time.

MR. ASH: Thank you, Jim. Mark.

MR. BUBRISKI: Just a couple of questions. One is, do you have at this time, as you get into construction, any plans for any on-site housing, or any large man-camp type of facility? And secondly, let's assume hypothetically that the SFC does not award White River Oil Shale a loan guarantee package. If that should happen, how altered does your development plan become?

MR. GODLOVE: I'll answer the first and sidestep the second. At this point in time we are planning a fairly significant on-site construction camp type of operation, would consist of both of an RV type of camp facility and a single status camp located in a different locale than the RV camp. Although I do have to mention that we are continuously reevaluating that approach. Our housing consultants suggest that it might be prudent to install construction camp type facilities in an existing community, for instance, in the Vernal area. And that is a very real possibility at this point in time although we have not made any final decision.

You may know White River's owners have about 720 acres of land just south of Vernal that was basically set aside for permanent housing, for operating employees although it could be used for temporary housing as well. So the final decisions really have not been made on that.

Now with regard to the SFC loan and price supports for the project. The owners are on record, as I think many in the oil shale industry are today, that the development of oil shale under present economic conditions has got to be a joint effort between both industry and Government. I think the interests accrue equally to both of those entities. Consequently some form of Federal assistance

for the developing oil shale industry is appropriate at this point in time. The owners are on record basically with that opinion. I really can't tell you how the White River Shale Project schedule might be altered in the event SFC did not come through with some sort of assistance to the project. That is a decision that I have to defer to our owners. It is a decision that they have to make, and the decision is different within each one of the three owner companies. I really just can't say at this point in time. We, the White River Shale Oil Corporation, are very optimistic about our chances to move forward. We've got the resource, we've got the management team, we've got the permits, we're ready to move forward, and we're confident the SFC can see our readiness to move forward.

MR. ASH: Lee, go ahead.

MR. CARIE: You mentioned you are considering or may consider placing facilities in Vernal to house some of your employees or your construction workers. What criteria are you going to use for making that decision? Whether to build a man-camp or place them in Vernal? Is it strictly economics?

MR. GODLOVE: Lee, I'm really not sure what sort of design criteria we will use for that. Obviously whatever we come up with will have to be 10 percent agreeable to Uintah County, Vernal City, Naples City, and the other entities in that area. Consequently I'm not just exactly sure what sort of criteria will be used. I think there's pluses and minuses for bringing construction people into a fully established community. Obviously you have to transport them a great distance. We're 46 miles from Vernal to our plant site. That's on the down side. On the plus side is that the facilities that we build as a part of that construction camp would ultimately be available to the communities, and we are planning a number of amenities for these people that, following the completion of construction of the project, would be rather worthless out on our project site. So there's a lot of trade-offs, and Jack Lyman, our Director of External Affairs, I am sure is working intensively on those things at this time, but I am not aware of the exact details of that.

MR. ASH: John.

MR. DONNELL: Jim, I'd like to ask if the Birdsnest Zone consisted entirely of oil shale with voids in it or in the lower part did you actually get nahcolite in place? And let me ask another thing while I'm at it. No. 2, what sort of water quantity and quality did you get while sinking the shaft, either in the incline or the shaft?

MR. GODLOVE: Okay. As far as the makeup of the Birdsnest Zone itself, I would almost have to defer that to John Miley. I think he is a lot more qualified to discuss it than I. I am really not sure. All I do know is that what we found in the Birdsnest is what we essentially expected to find and what we see in the Evacuation Creek in the outcrops of the Birdsnest Zone, which is quite vuggy. The shaft, it did not appear that there were a great number of interconnections between the vugs. I mean, in one section it would take a lot of grout and then one foot below it would take absolutely none. Now as far as the mineral makeup

of it I am really not sure what was involved there, although from what I get from our mining engineers we really didn't find too much that we didn't expect to find. We did find that the Birdsnest in its upper levels, say the upper 60 to 70 feet, was a lot tighter than we ever expected that it would be. The bottom 30 feet or so took a lot of grout.

Now as far as the water makes. The whole idea of that sinking operation is not to make any water when we began sinking through it. Now that's exactly what we got, as we sank the shaft through the grouted sections of the Birdsnest Zone. As I mentioned, we are making as much water now really as we have made at any point in time, and it is about a gallon per minute. That's in the unlined section of the shaft. We've got another 5 or 10 feet to go. It's a very wet section of the zone we know we're going to be going through so we have the opportunity of making a lot more water. I don't know whether we will or not.

Now as far as the decline goes, we haven't begun sinking through the grouted sections yet. Basically what we try to do is grout to the point that we just don't - if the formation does not take much water, because after we grout we then go back in there and try to pressure it up with water, and so long as the water takes following grouting are not substantial we feel like we've got a fairly good cover in that area and proceed to sink through it.

MR. DONNELL: Well prior to sinking both the decline and the shaft, I presume you drilled holes and checked for the water, the quality and quantity. Now what were the results there, do you remember?

MR. GODLOVE: It seems like on the shafts, each one of those drill holes was making, the number I heard was four-tenths of a gallon per minute per drill hole. Now I would need to follow up on that, John, and our mining engineers can certainly provide you with more definitive information than I, but it was a very low water make in each one of those holes. We are not dealing with artesian pressure here.

MR. HANSEN: Jim, would you mind telling me again what reach of the White River you were having to provide the bank protection, and also where were you getting the riprap?

MR. GODLOVE: Concerning the reach of the river, the area that the alluvial wells are installed in is approximately one to one and a half river miles downstream of the new White River bridge. It is essentially north but a little bit east of the plant site, so it's in that stretch of the river. That is about the midpoint of what will be the White River Reservoir whenever the State of Utah builds the dam on the White River.

Now as to the source of the riprap. That riprap came from the construction activities on site. We've built a road to service the water wells. The bottom, there was a section on the lower half of that road where there was quite a bit of cutting involved. There was a tremendous amount of blasting necessary in that area and we have stockpiled all of that material for use in later construction activity. We also found that it was quite amenable for use as riprap in the

river because it is native stone, and it's got pretty good strength characteristics as well.

MR. HANSEN: What about the clay for the liner for the retention pond?

MR. GODLOVE: The source of clay was obtained from north of the community of Bonanza. Basically the site of the clay borrow area was right along the right-of-way of the new electrified railroad from the Deserado Mine over to the Bonanza Powerplant. We made an arrangement with Western Fuels who has that right-of-way to come into that area and remove clay material. We used about 50,000 cubic yards of clay in the construction of that dam, so that's where it came from. This is also the location where the State of Utah is planning to obtain clay for the White River Reservoir as well.

MR. HANSEN: Thanks, Jim.

DR. KILBURN: I had a question about the revegetation of the soil piles you talked about. I think you said it had been done successfully. What was used?

MR. GODLOVE: It's been done. It's too early to say how successful we are. All three of the long-term stockpiles were essentially complete early last winter. We have been adding additional topsoil this spring but we segregated a separate portion of one of the piles for that material. What we did, we hydro-seeded and hydro-mulched the piles. I think it was in mid- to late November of last year. I would have to say we have had mixed results so far, as far as our success in developing a vegetative community on the stockpiles. There is material growing on the stockpiles from our revegetation effort. There is also a tremendous amount of invasion on to the stockpiles of weedy species as well. We do plan to come back in and provide an additional treatment again, in fact, it is underway at this point in time.

DR. KILBURN: Was this just general grass mixtures that's used on highways?

MR. GODLOVE: Right. Essentially our seed mixture is quite similar to the one that BLM suggests being used in other disturbed areas. We have revised the mixture a little bit. We've upped the dosage, I think we're at 15 pounds of seed per acre, versus the standard of about 8 to 10, I believe, if my numbers are right.

MR. ASH: Other questions for Jim, or comments? Hal Boeker.

MR. BOEKER: I have one question for Jim. Jim, you mentioned the large number of raptor nests that are present within the vicinity or on the tract itself. I was just curious as to whether there was any conflict with active raptor nests during your past spring and summer work season?

MR. GODLOVE: No, none of the active nests are located really anywhere near our current development activities, although there are a number of other nests very close by; in fact, I guess it was about 3 months ago we found another nest really within 500 yards of our construction activity that our raptor biologists just had never noticed it before in that area.

MR. BOEKER: And that nest was not really disturbed by the activity that was going on?

MR. GODLOVE: Not that we've been able to detect. In fact, we're finding what you find classically. Raptor activity is a direct function, it is totally proportional with the level of rodent activity and the like on-tract, and we've had an explosion of rodent activity in the area. Consequently, the raptor activity has followed suit. As I mentioned, the number of raptors on site and in the area is at the highest level in our 9 years of monitoring on site, and each one of the active nests has fledged at least I think generally about two young.

MR. BOEKER: Thank you, Jim.

MR. UTTER: Jim, on the methane problem, what type of monitoring program do you have now for the methane gas now that you're down in the Birdsnest?

MR. GODLOVE: I am sure that I can address that real well. We monitor for methane continuously using some sort of instrument. So we have that on-going continuously in both shafts, both the decline and the shaft. Basically what we do as far as controlling that, we have ventilation fans, basically at least two, serving each of the mine entries. One of the ventilation fans on each of the entries is permanently locked on. There is no way for it to shut down except in the event of a power failure. We do have subsequent fans that are available to be turned on should the methane concentrations approach a level where we would be concerned. We have been finding methane in pockets, and as you hit those pockets you get a little, or fairly substantial release of gas, although fairly short term. To my knowledge we've only had one incident where we have evacuated an entry because of gas level detected within that entry. What we did there was we simply said "everybody out of the hole," kicked on the other fan, and just let it ventilate for some period of time.

I have just one other thing. MSHA has been on site numerous times over the last year and has been closely involved in our gas monitoring program. We are still not a gassy operation yet.

MR. ASH: Thank you, Jim. I have got a couple of questions and I would comment as I did earlier, I visited the site in September and I was very impressed especially with the housekeeping. That's the neatest, most orderly construction project I think I've ever seen. A couple of questions. We were seeing these socio-economic monitoring reports. I don't remember seeing one recently. Can you tell me what the status of that program is?

MR. GODLOVE: First of all, Hank, thank you for the compliment. Bob Pratt, our President, won't let us do it any other way, because he's on site quite frequently! And secondly, on the socioeconomic monitoring, we are continuing with that program. To my knowledge we've been issuing the reports. Maybe they're getting later than they should be. I did talk to Jack Lyman just before I left and he indicated that there is one report that is just about ready to come out.

MR. ASH: I think we got the First Quarter of the year, I don't remember seeing succeeding ones, maybe we have them.

MR. GODLOVE: Well if we haven't been doing a good job on that, we'll look into it.

MR. ASH: Maybe I haven't been reading the mail! The other question, I was curious as to how that natural asphalt from Asphalt Ridge was holding up in that rather major road that was built in there using it last year.

MR. GODLOVE: The cold rolled natural asphalt is holding up, but it's not comparable to petroleum-derived asphalt. Now the hot mix native asphalt is just performing fantastically. There have been absolutely no failures with it. I don't think that anyone driving on the road could ever detect the difference between the native asphalt and petroleum-derived asphalt out there. There have been some fairly heavy loads go across that.

MR. ASH: Thank you, Jim. Other comments? Clarke.

MR. WATSON: Why has there been an explosion of rodent activity, I'm real curious about that.

MR. GODLOVE: I think it probably just follows the pattern of very favorable moisture conditions for the last 18 months to 2 years. Consequently the vegetative cover, seed production, has really gone up.

MR. ASH: They're not any more active than they were - there's just more of them?

MR. GODLOVE: A lot more of them. Right. Consequently we are also seeing a decrease in the level of reptile activity on site, because, you know, reptiles generally like open places, they don't like a lot of seeds and other type of vegetation. So what we're finding is naturally occurring and it follows the scheme of things.

MR. ASH: Thank you, Jim. Before we move on I want to make one introduction. Bob Lawton, BLM Assistant Director is here, and Bob, we're glad to have you here. It's not very often we get someone from Washington. We appreciate your coming by.

Two or three housekeeping details. I want to mention the material on the back table includes everything that has been distributed to the Panel since our last meeting for your inspection, and copies of quite a number of lessee-produced documents and other pertinent material that has come to the office, also for your inspection. I would ask all visitors to please sign in on that registration sheet, and then I would also mention that in Elanor absence Judy Hopper from the Oil Shale Office is helping us out on some of the details. If you have comments or questions or messages to relay you might talk to Judy about it.

Next on the agenda is a report from the C-b project, Cathedral Bluffs Shale Oil Project, and I think Dr. George Fosdick will speak.

DR. FOSDICK: I will need the overhead projector. I wonder if we could take a 5-minute break.

MR. ASH: So ordered.

Meeting recessed at 2:35 p.m.
Reconvenes at 2:50 p.m.

MR. ASH: Judy Hopper is back. If you have messages or need assistance, you can check with Judy. We will now go on with the Cathedral Bluffs presentation. Dr. Fosdick.

DR. FOSDICK: Thank you, Hank. Ladies and Gentlemen, I would like to give you a brief status report on Project C-b. Similar to U-a U-b we are continuing our environmental monitoring. We call it our interim monitoring phase, which we've been doing since March of 1982 at a somewhat reduced level over our previous development monitoring phase. This reduction is approximately 40 percent in scope over the previous development monitoring, and we will revert back to development monitoring in the spring of 1984. We're continuing our water management. In the past we have done that by a combination of reinjection and sprinkling, and direct discharge under valid NPDES permit. In 1983 the only mode we've been using for approximately 500 gallons per minute has been the direct discharge. In previous years we had water makes up to 1700, 1800, 1900 gallons per minute, but all throughout 1983 and most of '82 it's 500 gallons per minute. We've done some work on revegetation of both raw and spent shale, and Ed Baker, who I would like to introduce is with us. Ed Baker will give us the details of that should you have any questions in that regard.

I would like to refer you to our Annual Report. If any of you on the Panel have not been getting it you should see Bob Elderkin, because that should bring you up to date to the end of 1982, and as you know, all three shafts have been sunk to about 1700 feet. A 15-foot ventilation escape shaft, a 29-foot production shaft, and a 34-foot-diameter service shaft for taking men up and down. The over 200-man main cage in the service shaft is operational as are two small auxiliary shafts that can take about 9 men each. The production shaft is operational with regard to one of the two hoists. The other one we have no immediate plans to make it operational and we don't need it for the phase of the project envisioned.

In early 1984 we need to do some additional work in the ore pockets at the bottom of the production shaft. As I say, all these shafts were completely sunk before 1983 and are fully operational. What we have been doing this year is really shakedown operations of the hoists of these three shafts. In 1983 there was no additional above-ground construction. In 1983 the 138-kv line from Meeker to the tract became operational.

In 1983, January, we submitted a proposal to the Synthetic Fuels Corporation. In approximately July of 1983 we received a letter of intent from the SFC and an agreement is anticipated with them in December of this year. Like White River we have reviewed the SFC monitoring guidelines for nonregulated pollutants. We submitted our outline to the SFC and we have got initial comments back and hope before the end of the year to reach agreement on what we need to do in the monitoring of nonregulated pollutants.

We're continuing to refine our engineering and cost estimates for our proposed facility of approximately 14,000 barrels per calendar day, which is made up of one above-ground Unishale retort, and MIS retorts. The schedule is such that we anticipate commercial production in 1989 and we have a rather involved defini-

tion of commercial production, and that is that production that is deemed to commence on such a date has an average of at least 12,000 barrels per calendar day of syn-crude have been produced for 120 consecutive days, and available for sale. That's our definition and the date again, 1989, which is approximately 12 months after the mechanical completion of the modified in-situ surface facility. Initial retorting is anticipated from the AGR (above-ground retort) in 1987.

We are doing a lot of work this fall on our detailed development plan. The first draft of this detailed development plan is in management review right now, and we expect that we will be through that review on or about the 30th of November, between the 30th of November and the middle of December and we will release the document at that time to the Oil Shale Office and the Oil Shale Environmental Advisory Panel, and I'll have a few more details on that schedule in a moment.

With regard to permitting, we recently received two new permits. We received a new PSD permit, prevention of significant deterioration permit from the EPA. We obtained that in September of this year. We received from the State of Colorado, Department of Health, Air Pollution Emission Notices for our pollutant sources for the next phase of the project. We received that in October of this year, and we received an updated NPDES National Pollutant Elimination System permit in August of this year. That permit just nominally gets updated every few years and all that is an update of that permit, whereas the other two permits are for the new increased facilities.

In process with the Mined Land Reclamation Board of the State, we are working on that permit which allows us to reclaim the lands and disturb the lands associated with the current project. The anticipated submittal of this permit is in December of '83, and we would hope to get approval somewhere like July of '84.

A second major permit in process is with Rio Blanco County on their Special Use permit amendment and this amendment adds the OUG oil upgrading facility and the man-camp to that permit. The anticipated submittal there is in the month of November, probably the end of November, with approval hoped for in the summer of 1984.

Now if I can have Ed's help here on the Vu-graph, I would like to go over the schedule that we anticipate with the DDP. If you cannot see the Vu-graph I have handouts here for the Panel and those in the audience that wish to receive a copy of this in case it isn't legible from where you're sitting.

This chart shows the DDP milestones, and it was prepared with full concurrence of the Oil Shale Office, Eric Hoffman, when he was here in the spring of the year. As I mentioned before, starting from left to right, Milestone Date No. 1 is the 30th of November of this year, where we hope if we can turn the crank fast enough to have a draft of the DDP submitted to the Oil Shale Office and the Oil Shale Advisory Panel, and that would be approximately 50 copies distributed in that phase. Then we have allowed until Milestone No. 2, with OSO concurrence about a 4-week review span. So we would suggest to you, Hank, that you may wish to have an OSEAP meeting on or about the 4th of January, 1984, here to comment

on our draft DDP. Then proceeding to Milestone No. 3, the Oil Shale Environmental Advisory Panel would transmit their comments to the Oil Shale Office and to the lessee about the 11th of January. I should say that on the 4th we would be prepared at that time to give a full blown presentation to the Panel on the status and character of the anticipated project. At Milestone No. 3 the Oil Shale Office would prepare a public notice announcement. Proceeding to Milestone No. 4 would be the final DDP submittal on or about the first of February 1984 with wide distribution from the Oil Shale Office to various levels of the Federal Government, the State Government, the counties and the public in general. We would then allow an 8-week review span to Milestone No. 5, which would be a local public hearing, probably, not necessarily in Grand Junction, on the 28th of March. This would be followed one week later, by Milestone No. 6, by a public hearing and another OSEAP Panel meeting on the 4th of April. Allowing one more week span to Milestone No. 7, we close the public comment period on the 11th of April. Allowing another three weeks span, final OSO action on the second of May, 1984, at Milestone No. 8. As I mentioned, Hank, this was done completely in concurrence with the Oil Shale Office and its a tight schedule but we deem it to be a realistic schedule that we all really return to.

Just a few words on planned 1984 early work. In 1984 as I have mentioned, we have already said that we would submit the DDP, we would plan in early 1984 construction of materials handling facilities that are previously permitted. First would be to finish the loading pockets at the bottom of the production shaft to get that ready to accept the ore and second, to start above-ground conveyances to move the raw shale from the shaft area to East No-Name Gulch on the tract for on-tract disposal.

That summarizes in general what I intended to say. I would prefer to defer comments on the project until the next meeting, when we will go to a fullblown presentation.

MR. ASH: Okay, George, we appreciate your presentation. There may be a few comments and questions here. I would say that as to the schedule, it is very similar to the way we have processed and handled the DDPs before with the Oil Shale Office and we will certainly work with them and with you to try to meet the timetable. But we appreciate having it laid out in this fashion too. It is a good idea to lay out what the needs and demands are and what the time would be. Are there comments or questions for George? I guess not. Thank you, George.

Next, we will be considering Rio Blanco, starting out with the presentation of their status report and introduction of one of the major items we have to look at, the MIS retort abandonment plan, and you can handle this as you like, Dick Lieber, President of Rio Blanco.

MR. LIEBER: First of all, ladies and gentlemen of the Panel, I'd like to introduce if you haven't met already, three two of the people that we have here today. Howard Earnest, who is our Manager of Mining and Resource Management, Butch Slawson, who is the Manager of Environmental Affairs and Larry Weiner, who

is Manager of Planning and Economics. They are here with me today and they'll do actually most of the presentation and they've really got most of the answers to the questions that I'm sure that you'll have. But I thought that I would like to make a few introductory remarks before getting into the meat of the presentation that we're here for.

I do notice that your agenda asked for us to give you a basic rundown on the status of our project and so I thought I would attempt to do that. Our project basically has three major items going on right now. One is the operation of a newly constructed pilot plant, the second is engineering studies that we have going on, and the third is the maintenance of our tract operations. I'd like to review each one of those just briefly with you.

The pilot plant was constructed at Gulf Oil's Harmerville, Pennsylvania facilities, and the construction of that pilot plant was completed in about February of this year. The cost of the pilot plant was roughly about \$10 million. It is an oil shale retorting pilot plant based on the Lurgi technology. The plant to date has operated I would say very successfully. We have a number of runs which have been completed, the pilot plant has achieved stable operations, the startup bugs, etc., have for the most part been ironed out, and we are in the stage where we are collecting good data which can be used for analysis purposes and achieve the goals that we had set for ourselves with the pilot plant. We intend to operate that pilot plant into next year.

With regard to the engineering, the engineering efforts are being carried out at our Denver office, and we have a group of people there that have been taking the time to do a number of in-depth studies, and basically what these studies involve are comparison of all the available technologies that are available today and how they would apply to Tract C-a and trying to determine what would be the most economical and beneficial type of development plan that we could come up with for Tract C-a, based on these technologies. There are many other peripheral studies that surround that and that are going on. We do a good deal of the engineering work in-house; however, we also have a fair amount of external engineering effort and we have employed the services of Lummus Corporation and other engineering contractors at various times for help in our engineering studies.

The third activity which we have going on is basically the maintenance of the tract lease, and here as you may recall, we did finish our modified in situ program. It has been almost 2 years ago now, and since that time what we have been in doing is basically just maintaining the tract in terms of maintaining the mine and also doing the requisite environmental monitoring type work on the tract. Now with regard to the mine itself, that is mainly involving water handling and a water management plan. We have basically two sources of water which we have to handle from our mine. One is the water that comes into the retort system, those are the burned-out retorts that are there, and that water of course is treated very carefully, that is so-called retort water, and that water is put into ponds up on the hill, in back of our processing facilities and is kept in lined ponds where it is expected it will be contained until such time as it has evaporated and nothing is left but solid residue material, at

which time we would expect to cover up the remaining material. The flow of that type of water has increased substantially in the last year due to the rainy season that we have had and that U-a and U-b just alluded to. We built a pond system which would essentially take care of steady-state evaporation for about 16 or 17 gallons per minute, and we didn't have any flows that exceeded that until this year, and suddenly we got up to as high as 39 or 40 gallons per minute of retort water, flowing into the retorts. Well obviously our pond system couldn't last forever without overflowing, so we took a lot of extra special steps during the summer months here in installing sprays in those ponds to enhance the evaporation effect and try to keep up with it. Nevertheless, this amount of increased water has placed a little sense of urgency here on our retort abandonment plan and the retort abandonment plan which will be presented to you this afternoon will address that a little more carefully for you, but we do have some sort of urgency here sort of associated with this because it does involve the handling of excess amounts of water that really were never anticipated.

The other streams that we have in our water management plan are basically just plain mine water, uncontaminated water from the upper aquifer and all of that water is being reinjected, it's pumped from the mine and being reinjected into reinjection wells that are remote from the mine. In order to try to take a little bit of the pressure off of the retort water that was coming in and also off of the mine pumping system because the mine pumping had gone up to about 1700 gallons a minute at one time, and that was about the limit of our capacity, we have recently installed two pumps into two old wells which are adjacent to the mine in order to try to take some of the pressure off of the mine, and to that end we are pumping about 200 gallons per minute out of wells now. That water also is being reinjected.

The environmental program I think is proceeding to everyone's satisfaction. We are continuing to furnish all the requisite data and information to the Oil Shale Office and to others, and we hope that our program continues to be in conformance with your wishes.

The two things that we're here to discuss with you today, first and foremost, are the abandonment plan, and then secondly, we also would like to give you a rundown on the offtract land situation. With regard to the abandonment plan I'd like to say first of all that we take this plan very seriously and this plan has been worked over by us many times. It hasn't been just thrown together. We think this plan goes far beyond meeting the absolute minimum requirements of agencies and the law and this type of thing. We take it very seriously and towards this end tomorrow we intend to have another person here to answer any question you may have also with regard to any of the toxicological effects of the plan that we have. We will have a toxicologist here from Standard of Indiana and we have had this plan reviewed by everybody that we think could help us in trying to put together a good and safe plan.

Now with regard to the off-tract land, there are two pieces to that. The first is a lease request and this lease was requested under authority which was granted to the Department of the Interior in a bill which was passed last

December 30th, and that's for 6400 acres of land in the 84 Mesa area. We have just recently, in early October, also submitted to the Department of the Interior a request for a trade of some land, and basically there we have about 2600 acres that we're proposing to trade for around 2200 acres of land which would be contiguous to the lease site and to the tract. I am just trying to anticipate a little bit of the questions and the type of things that will come up. I would say that the major question surrounding perhaps the lease and the trade also, is going to be the questions of why 84 Mesa, and I think that we'll have today a presentation which will give you some background on 84 Mesa. And with that I would now like to turn over the presentation to Howard Earnest, who will, together with Butch Slawson, give you a presentation on the abandonment plan if that's okay with you, Hank.

MR. WATSON: Just one question, Dick. The Lurgi production in Harmerville, what kind of quality are you getting, sulphur-wise, API gravity, that kind of thing?

MR. LIEBER: Nothing that we didn't expect so far. Sulphur-wise, I expect it's in the 1 percent area. The gravity I'm not real sure, and don't know if we have anyone here that knows either. Everybody is shaking his head Clarke, so we can't tell you. But there have been no surprises so far in oil quality.

MR. ASH: What rate does that pilot plant operate at?

MR. LIEBER: It's a 1- to 5-ton per day pilot plant, we are presently at about 3 tons per day.

MR. EARNEST: I would like to express our appreciation for the opportunity to present a brief overview of the proposed retort abandonment program that Rio Blanco has developed for our Tract C-a facilities. I will cover the mechanics of the program and then Butch Slawson will give you a description of the monitoring activities that will be concurrent with and subsequent to the retort abandonment. In the way of background, as Dick mentioned, the Rio Blanco Oil Shale Company completed its MIS demonstration in the spring of '82 with the successful burning of two retorts which show as the two yellow and blue columns in the middle of the slide. The smaller retort was burned first and it was 30 x 30 by 165 feet high and was burned between October and December of 1980. Retort 1, the taller of the two, was 60 feet square and 400 feet high, and it was burned from the period of June through December of 1981. In late 1982 we experienced a series of rather catastrophic pump failures which resulted in a flooding of the mine and the retort. At this time the mine actually flooded to a depth of 283 feet above the bottom level and the retort flooded about 100 feet less. This was the direct result of massive pump failures, mine inflows at this time were in the range of 1200 gallons a minute so it didn't take long for the water to accumulate once the pumping capability was taken from us. It should be noted that the retort waters never got into the mine system because the head differential of the mine was always higher and any water transfer from one system to the other was from the mine into the retort. While this complicated our evaporation problems perhaps, it was far preferable to having the lower quality retort water get out into our mine water system, which is basically upper aquifer water.

The next slide shows the surface facility as it exists today. The evaporation ponds that Dick referenced are shown as the Phase 1, 2, and 3 ponds in the lower right-hand corner, 12 ponds with a capacity of approximately 24,900,000 gallons. We also have another pond which is capable of receiving this quality water and it is referred to as the East Retention Pond which is in the center of the slide. The West Retention Pond is the mine water or aquifer water pond. As Dick mentioned also, all the mine water, that which is pumped from the mine proper, is reinjected at this point in time. Inflows reached a high of 1776 gallons of water a minute in September. This was the direct result of an abnormally high precipitation year. Our precipitation on the tract for the past year is over 50 percent above normal, and this has shown up in streams flowing year-round which I never saw flow except after severe rainstorms in the past. The retort water is discharged to these 12 ponds. They are hypolon-lined and we are currently evaporating both using solar and enhanced sprays. We have a spray system installed in every one of the 12 ponds now and this has resulted in about about a 70-percent increase in our evaporation capabilities. I spend the time on this because the water management is one of our very pressing concerns right now, and it has been linked to the retort abandonment for approval. It's been projected that our evaporation pond capacity will be exceeded by February or March of next year if we are not permitted to take alternate action, and the alternate action which we are here for approval of as well as retort abandonment is the transfer of a portion of the water from the evaporation ponds into the East Retention Pond. Now this East Retention Pond is clay-lined, it was constructed and used during the processing period to receive all of the strange and exotic water which may have gotten out and around on the ground, around the processing plant. So this pond is not something that is totally pristine in nature, and we feel that this is the logical repository for our surplus water at this time. The other alternative is not even an alternative seriously, and that would be the discharge of these waters into Corral Gulch.

So with this urgency in mind, we would ask for expedient consideration of the overall plan or at best the divorcement of this particular water management problem from the overall retort abandonment scenario.

The next slide is an illustration of the conditions that we project relative to the evaporation pond problem. If you start on the left-hand side of the solid line and come down to the first flattening, that is where we are at today and if we were not allowed to discharge water to the East Pond, the dashed line going up and crossing the red line at the top shows that point at which the evaporation pond capacity would be exceeded. If transfer of approximately 3 million gallons were permitted at this time, we would be able to get into the next evaporation season in good shape and would go very well until next fall when the next crisis would arise, and it would be directly related to the retort abandonment program which we are going to present to you today, and this would again be alleviated by a second transfer of water to East Pond. The East Pond, by the way, has a capacity of 11.2 million gallons and it currently has about 4.8 million in it. It also has been equipped with evaporation enhancement sprays.

The next slide will outline the general points which will be covered in our abandonment plan. We considered several alternatives in arriving at this par-

ticular scenario, keeping in mind that our real objective was two-fold. One was to cease the operation and maintenance of the retorts, and more importantly was that we do it in a manner which would not be environmentally disruptive to the ground water system in the retort and the tract area. The alternatives which we considered to arrive at this one ran the gamut from do nothing but shut off the pumps and start monitoring, which leaves great degrees of lack of confidence in what would happen. That alternative would result probably in the indeterminate length of the monitoring program because you would never know really what was going to happen. At the other end of the spectrum we looked at grouting the retorts and rendering them basically impermeable. This is still a far fall back, last resort type of a solution but it in itself is not an absolute solution because it merely slows down the rate of diffusion or transportation of materials over an extended period of time, so grouting has been considered and will be considered as a more or less Doomsday thing if the program here indicates in the final monitoring stage that we do indeed have a concern.

The plan as you see here calls for an initial pump-down of the water that is now in the retort. We currently have about 90 feet of water in the retort system. This would be pumped down to the base of the retorts to allow for the introduction of fresh water. This water that's in the retorts, by the way, has been coming in at a rate from 15 to 40 gallons a minute for the past year, and we have been undergoing a long leaching experiment, while not by design but in practice has turned out that way and we feel that this particular activity the one plant has been beneficial in the development of our program here.

Once the retort has been pumped down initially, we would allow it to flood and to cool. The upper portion of the retort still has temperatures in the range of from 190 to 800 degrees Fahrenheit so that this flood cool period would be relatively slow to allow for the elimination of the steam that would be generated during this cooling period. The rate of steam generation would be the factor that would control the rate that the flooding would take place. Once the retort was flooded, and incidentally the mine would be allowed to flood concurrently with this, always maintaining a higher level in the mine than in the retort so that any leakage which may occur would be from the mine system into the retort system. Once the retort was flooded we would go into a recirculate and leach mode, and here the water would be pumped out of the bottom of the retort system to the surface, reinjected through the cased burner holes back into the top of the retorts and this would continue until one of two things had occurred: one, an arbitrary number of pore volumes of water coming through could be used as a criteria or we could and more probably base it upon an indication of change or stabilization in the water quality of the leachate being circulated. This system has been substantiated by independent research as a viable means of doing two things, one is to remove the more obvious soluble materials, your sodium, potassium, and calcium salts, the sulphates, what-have you, and as a side fringe benefit the Los Alamos Labs down in New Mexico have reported that these higher concentrated leachates have a very marked tendency toward the attraction of some of the heavy metals, the molybdenum, vanadium, lithium and boron type things, with a rather substantial amount of those materials being removed from the rubble and being able to be discharged into the evaporation ponds ultimately. Once the recirculation mode has been completed by whatever criteria, we would

then pump the entire retort system down, not only to the base of the retorts but we would also pump the water out of the Product collection system and the separator system. This was not done initially because we don't have the pond capacity to handle that additional water at the lower end. Once all this water had been pumped out we would allow the retort to flood for the final time and we would be into a monitoring program.

The next slide will show the schematic of the retorts. Here you can see the upper aquifer is intercepted by retort No. 1 and this is the area of principal concern in the monitoring program that Butch will discuss with us. The brown area represents rubble in the retort, the dirty gray area at the bottom is the product collection system which will only be pumped out during the final pump-down. Concurrently with these activities, we will be drilling a series of four monitoring wells down hydraulic gradient from the retort such as the one shown on the extreme right, and these will be equipped with sampling and monitoring devices to track the movement of waters through the retorts and out into the aquifer system. We also plan to drill one well into the rubble itself to serve as a base case for the comparison with the outer well. We will also equip four of our existing wells surrounding the retort area with sampling and monitoring equipment so that we can get both up gradient and down gradient migration patterns for the waters as they pass through the retort area. Some of the hydrologic modeling that has been done indicates that the principal movement of water occurs in the A-groove and the B-groove which shows as the darker blue bands at the upper and lower boundaries of the upper aquifer, and that very little vertical transmission or migration occurs, so that it is anticipated that water movement through the retort will for the most part affect that area intersected by the B-groove and with very minor diffusion type transfer of materials vertically. You can visualize from this slide if you would the pump-up, pump-down mode would take all the water down to the gray area, then would flood clear up to the top of the brown, circulate back up through the two pump columns we show there, back down into the top of the retort, round and round for the number of times that are deemed necessary. Then pumping down, including the gray, and then allowing it to flood and equilibrate with the aquifer as it will restore as the cone of depression collapses.

As I mentioned earlier, the experience we've had in the past year following our inadvertent flooding of the mine and retort provided us with some of the most valuable information on how this material will leach and what water qualities can be expected, we will be showing some slides relative to this and Butch will touch on these water qualities in his presentation as well, but this actual hands-on experience coupled with the research work which was done under Rio Blanco funding and also the independent work previously mentioned by DOE with Los Alamos Labs, indicates that the system we've selected here will work and it is felt that it is the best available for Tract C-a at this time.

The next slide will demonstrate some of the things that have been happening in the retorts over the past year. We'll take the temperature first. If you will see that we were tooling along at about 80° Fahrenheit up until last October, when it took a drastic drop, and this drastic drop in temperature was a result of this flooding period which I mentioned earlier. The inflow of large amounts

of aquifer water tended to cool down the whole system, but once the pumping had been restored, we returned basically 80° temperature and we ran along very nicely up until May, at which time we started to get the increased inflow due to the increased ground water levels due to the precipitation we've had in the past year, and these temperatures continued to climb until they reached approximately 120° F, at which time, within the last two to three weeks we've experienced a leveling off of these temperatures. Part of this is due to the addition of the two dewatering wells outside of the mine. Dick didn't mention it, but another effect of pumping this additional 200 gallons of water a minute from the area has resulted in a 12-gallon-per minute decrease in the retort water inflow, and from this standpoint alone the addition of those two pumps has been well worth the effort to put them in. The pH is not particularly significant here except it does follow the same general cyclic trend that we saw on the others. The important thing I'd like to point out here is that the pH of our leachate has been in the neighborhood of 7.8 to 8.2 as compared to the high 10s and 11s which you read of so commonly in the literature. This is something that we feel is significant and will be of great advantage to us in our abandonment activities.

The next slide shows the trends in just two of the major ions which we encounter in our leachate, and the same general profiles hold true for the dissolved organic carbons, the sulphates and any one of a number of other items which we do monitor. Here again following through, we see things were kind of coming down and stabilizing in October of last year and with the flooding which occurred in October and November we got a rapid increase in the concentrations of both of these ions, and this was basically due to the leaching of new materials as a result of water coming in higher in the retort, and then in January and February things kind of stabilized again and they ran along at fairly constant levels, there's a little fluctuation up and down but basically the trend was one of equilibrium with the system, and then in May again when the inflows came in again higher up in the retort, exposing new previously unleached shale to the waters, we see an increase in these concentrations up until about September again, when we see a general tapering off of these levels, indicating that the channeling effects of these waters coming in had reached a point of equilibrium with the materials again and we would have expected to see these things flatten off and perhaps start to drop. The thing to remember here is that this same trend is identifiable in other constituents and the ups and downs can be directly related to activities relative to the water inflows into the retort.

The scenario that I briefly described is felt to be the best that is at hand right now. It offers an excellent opportunity to abandon these retorts in an operationally feasible and environmentally acceptable manner, and at this time I'll let Butch take over and describe the monitoring program and probably defer all questions until the end, and then there will possibly be redundancies eliminated.

DR. SLAWSON: As Howard indicated, with regard to the abandonment program, the basic matter of environmental concern is the interaction of the MIS retorts with the upper aquifer. This slide as Howard went through it showed the MIS retorts, Retort 0 and Retort 1 as major components of the upper aquifer in the zone, and it did cover several things which are noted here. First of all, Retort 0 is not

connected directly with the aquifer and similarly much of Retort 1 is below the aquifer itself. The exchange of soluble materials with the lower section of Retort 1 and the aquifer is by the diffusion process and it is not going to be important as far as affecting the water quality in the upper aquifer. The main interaction, therefore, is going to be with the aquifer and the upper portion of Retort 1. Our modeling has indicated several things, modeling and evaluation of the hydraulics of the system, has indicated that during flow through the aquifer that the concentrations observed in the aquifer are expected to be reduced appreciably with flow away from the retort. The modeling indicates that this decay or decrease in concentrations will be on the order of a factor of one-tenth by the time water flows through the retorts and then reaches the tract boundary, a distance of approximately a mile away. Also once the gradients are reestablished in the upper aquifer, the flow rates although they are quite variable in this fractured rock aquifer, are expected to be relatively slow, perhaps taking from 6 months or so to several years to reach the tract boundaries.

(Next slide) In developing the monitoring program for the abandonment we had several goals in mind. The general goals were, of course, to keep track of the progress of abandonment and secondly, to keep track of the effects on upper aquifer water quality. In addition, in order to make the monitoring a management activity and not just a data collection activity, we've developed criteria for response to the monitoring data, basically to define when abandonment may be having an unacceptable effect on the upper aquifer. We have also defined criteria as presented in the plan for defining when abandonment has been successfully completed. In meeting these goals we have defined where to monitor and Howard covered this briefly in his presentation with the monitor well array right around the retort, we've defined what to monitor and I'll be discussing that in a few minutes. In addition we've defined a strategy for collecting data, evaluating data, and making decisions on that relative to what's going on. This latter item of evaluation and decisionmaking essentially relates to defining who or what is potentially affected by retort abandonment. That is getting essentially, as I said before, back to defining what an impact is.

In the earlier slide I described the possible retort aquifer interaction. The direct use of upper aquifer water on or near Tract C-a is essentially nonexistent. What may happen is that water flowing through the retort may come up in springs east of Tract C-a. The nearest springs that we've identified now and are monitoring are shown by the two red dots here, located in the Corral Gulch drainage, about a half a mile and two and one-half miles roughly off of Tract C-a. The direct connection between the retort and these specific springs is anything but certain because of the complexity of the system we're dealing with, the fractures passing through the retort would have to be directly connected with fractures feeding these springs. In the Corral Gulch and Yellow Creek drainage there is some irrigation activity and cattle graze and water in the area for part of the year. The interpretive or response criteria selected for monitoring, therefore, relate to these uses to irrigation and cattle grazing.

(Next slide) We have conducted some literature review and selected these criteria again relating to the specific uses we have in the area, using drinking

water or other criteria just doesn't apply to the system that we're talking about. Therefore the monitoring and response strategy is designed to avoid exceeding these criteria at the tract boundary, well above any points where that water might come to the surface and interact with water uses in the drainage.

Can we go back for a second to the map? As shown in this slide there is some distance from those potential spring discharges and so using the tract boundary as kind of an artificial location of not to exceed these use criteria adds one of actually several safety factors built into the monitoring and response program. So we have these use criteria at the tract boundary and we also have modeling which indicates this concentration decay from the retorts to the tract boundary being on the order of a tenth. By combining these two pieces of information then, we can back calculate or estimate the concentrations which when observed at the retort would lead to an exceedance of the use criteria, as water quality criteria on the previous slide at the tract boundary. Thus, this potential to exceed the water use criteria is essentially our definition of potential impact or something that we would respond to. Measuring the water quality near the retorts as we proposed is the most appropriate basis for making these decisions and creating something to respond to. In this manner we aren't waiting, for example monitoring the springs or further down gradient, and responding to an impact as it may be occurring; we're monitoring and responding to the potential for that kind of impact. This is essentially the rationale for the monitoring program and for the monitoring response that we've incorporated into it. It embodies how we're monitoring, and what it is that we're protecting.

Moving on to determining what it is that we're monitoring in this program, we examined the literature data and data from the on-site monitoring of leachate from our retort. (Next slide) The criteria we used in selecting constituents for monitoring include the utility of the constituent as an indicator or tracer of retort leachate, the potential toxicity or other types of environmental effects, the utility for quality control purposes, such as completing ion balances and that sort of thing in a laboratory for quality control, and the efficiency and the time and the cost of analysis. Since the upsets and the partial flooding of the retort, we have monitored the retort leachate quite extensively. We have monitored 42 inorganic species, dissolved organic carbon, trace organics and reduced sulphur species. Howard showed you the time series that we've been tracking, the major ions, and as he indicated, most of the major ions follow that same sort of pattern of increasing when we're leaching new areas and then leveling off at some point as we saturate or come into equilibrium with the system. Most of the trace metals that we have been monitoring turn out to be less than the detection levels of the analysis, and for that I refer you to Table 11 in the monitoring plan.

In evaluating what's best to monitor, we compared the ambient water quality and the leachate water quality with State water quality standards, and not surprisingly the leachate quality exceeded the State water quality standards, but also we discovered that the quality in the upper aquifer, the ambient water quality, also at times exceeds the State water quality standards and so we felt that there was not much use in using those State standards per se in the monitoring program to identify what we would be dealing with for impacts. Next slide.

We felt that a more appropriate measure for looking at potential water quality changes was comparison of the leachate water quality with the ambient quality. Here's the table out of the plan. It's Table 5, I believe, that compares leachate quality, which is in column C with water quality from the upper aquifer, column B, and from Yellow Creek, the upper aquifer being the location of immediate interaction with the retort and Lower Yellow Creek being the nearest perennially flowing stream downgradient from Tract C-a. It should be noted that this is a conservative measure of what one might expect of leachate and how it may relate to ambient water quality because these are the maximum that we've observed in the retort leachate for concentrations and hasn't had the benefit of the recirculation and leaching process that Howard described earlier. But it does provide some measure of what to expect and for determining what it is that we want to monitor. Certain of the ions, the potassium, the K there, chloride, sulfides and ammonia, the NH_3 , showed that they are much higher in the retort leachate than in the ambient water systems, and, therefore, those constituents are likely tracers and would be very useful for keeping track of where the leachate is going in the aquifer. Others such as calcium and alkalinity, show moderate to no increases over the ambient. Most of the trace metals, there's a few shown here. Some of them show at lower levels in the retort leachate relative to the others, but I'm not sure that would occur if they mixed, but it showed that you wouldn't expect a great change. Most of the trace metals, there are a few shown here, were less than the detection limits and really in all three systems that's fairly typical for many of the trace metals. Beyond salinity effects, a lot of these parameters by themselves aren't really toxic, However, they are useful in meeting some of the other criteria for the monitoring program such as defining tracers for the system.

We also looked at organics because they are an item of concern environmentally. In addition to the dissolved organic carbon as shown here, where it indicates we might get moderate levels of increase over the ambient water. We examined the trace organics using GCMS techniques. We attempted to identify all the organic compounds present in the retort leachate. There is a 4-page table in the monitoring plan that gives data from the U.S. Geological Survey and samples that they took of the retort leachate. That 4-page listing indicates a large number of organic compounds that can be found in this retort leachate. These organic analyses were examined by our corporate toxicologist for indications of possible human health and environmental effects. It turns out that there is little toxicological information on many of the compounds listed in the trace organics analysis. However, we were able to conduct our analysis based on information on similar compounds or classes of compounds, and that evaluation on a group-by-group basis is in Section 5.5 of the Monitoring Plan. The overview of that analysis is that there doesn't appear to be any of the organic compounds present that are at levels sufficient to produce toxic effects. I had some discussions with some other individuals who work in this field and the feeling was that most of the compounds are also biodegradable and not inherently the type of compounds that bioaccumulate.

In addition to this broad spectrum organic analysis, we analyzed for the organic priority pollutants. (Next slide) The priority pollutants are compounds designated by EPA as toxic under the Clean Water Act. This is the result of

some of those. The two right-hand columns are for retort leachate, the second column of data there is from retort water during the processing just to indicate that there are significant differences between retort water and the leachate water that we are producing now. Of the compounds identified in the leachate, only benzene was observed to exceed the water quality criteria. However, the criteria also developed by EPA, are for lifetime exposures in drinking water and consumption of aquatic organisms living in waters containing these compounds and the circumstances for those criteria don't really relate to the specific circumstances of Tract C-a and to this abandonment exercise.

Examining these data, these type of data, and also looking at the criteria that we outlined before, (next slide), we defined the parameters in the left-hand column here, this is Table 6 out of the Plan, as being our basic water quality parameters to monitor. The trace constituents in the other column would be monitored on a less frequent basis because for various reasons they are either - we don't think they'll be detected or they are not environmentally significant or a combination of those two. They would be monitored on a less frequent basis because they are just not important for impact detection relative to the basic water quality list. In addition, we are proposing to monitor the organic priority pollutants periodically just to provide an additional measure of the organics present in the water.

I have covered much of the philosophy and thinking that went into the design of the monitoring program, an overview of the potential impacts of abandonment, the water uses that we would be protecting during abandonment, and how we will monitor to assure that protection, and the indication of the water quality constituents that were used to monitor the abandonment activities.

The next slide is an outline of the strategy following the phases of the abandonment program. In Phase 1, which is during the recirculation and leaching, the focus of the monitoring program would be on water level monitoring and also looking at the retort and mine water quality, because during that procedure that's where the action is going to be and what we are trying to determine is how effective is this leaching process and where do we reach a point where things level off and we've done what can be accomplished with this leaching process. After that's concluded and the mine is pumped down as Howard indicated and then allowed to refill, we enter Phase 2, which is the retort flooding, where we create a circumstance where we have potential interaction between the aquifer and the retort. Here the monitoring focus shifts and focuses on water levels and the water quality not only in the retort but in the near retort wells. As I've indicated, we've created the potential for the interaction between the retort and the aquifer, and so we are monitoring to the point where we see that interaction and then we have defined that as being into Phase 3, where we reestablish flow through the retort and into the upper aquifer and out to the near retort wells. The focus then is on the water quality impacts on the aquifer and on evaluating the potential for impact as I outlined earlier.

Phase 3 continues until program termination, which is designated here as Phase 4, in which we use the monitoring data and the results of modeling to evaluate again the potential for impacts on water uses and once one reaches the conclu-

sion that there is no reason to believe that we will impact those water uses, then the monitoring program abandonment will be concluded, determined to be successful, and monitoring would terminate at that point.

That's the overview of our strategy, and I guess we open it up to questions at this point.

MR. ASH: Thank you, Butch, and Rio Blanco staff. Before we go into a general free-for-all on it I'd like to organize ourselves a little bit. We had asked our Water Quality Workgroup to take the lead in review and Deborah Linke is chairman of that. Deborah was unable to be here. I'm not certain whether she asked EPA to take the lead in her absence for the workgroup. Is that correct, Larry?

MR. SVOBODA: Yes she did, but there has been no interaction among committee members at this point. We'll have to form some sort of a workgroup tonight to discuss the comments that people might have.

MR. ASH: Okay. Let me make a couple of other comments. We do have a workgroup listing out that was distributed today of everybody that is supposed to be on the different workgroups. The letter of October 5 from the Oil Shale Office, from the Acting District Manager, Bob Elderkin, puts it in kind of context of when they need advice back and kind of summarizes the issue from Rio Blanco's standpoint. As he is saying, they need advice by mid-November. Ideally we would hope to be able to decide or arrive at some consensus on the Panel's position tomorrow, when we try to conclude our consideration.

I guess we can open it to general questions. Do you have any specific things from your workgroup standpoint that you'd like to get into?

MR. SVOBODA: Yes. Before we get started I'd like to introduce the fellow here to my right, Paul Osborne, he's with the Environmental Protection Agency in Denver. He is the Regional Groundwater expert for our 8-state region and is in the underground injection control program in Region 8, which is part of the Safe Drinking Water Act. So Paul has come with me to the Panel meeting for these 2 days to discuss the retort abandonment plan.

MR. LIEBER: If I may interject something here. I recognize that you have got a schedule to maintain and you have many items to consider this afternoon. It is not necessary for you to move things around and take up time now to entertain questions and answers. We are going to be here, all of our people, overnight. If your workgroup convenes and would like any of us to be here to answer questions, we would be at your call, if that would be helpful.

MR. ASH: I was going to propose something like that, that you all serve as resource people this evening. I think, though, I would like to allow a little time for some at least preliminary questions. We can, of course, go deeper into it tomorrow as need be. But I would like to allow a little bit of time for some questions and comments. We may need some input from the Oil Shale Office also, any comments they may have or guidance they may want to give to us from their

perspective. The other thing is let's spend a little time on questions then we will take a 5-minute break, and then the workgroup can say what they want to do this evening and plan a meeting. We'll find out in the meantime whether this room will be available this evening for our discussions, and then we'll go on to the next item on the agenda. So let's allow at least a small amount of time here for questions or general comments. Larry, do you have anything overall from the workgroup perspective?

MR. SVOBODA: Well, I can only speak within our purview of the EPA. I guess to summarize the general areas of our concerns they would fall in four categories. I'll just state what those categories are now and then move on until we have more time to discuss them with greater specificity.

First, would be pond and water management. We have some concerns there. Second, would be ground-water monitoring, what they propose, and maybe some additional things we'd like to see them do. Third would be waste management and what they're proposing to do with the sludges in the pond that might develop through the abandonment stages. Fourth is compliance with the underground injection control program under the Safe Drinking Water Act. Those are the four general areas. We have several more specific questions that would fall within those four.

MR. ASH: Other comments, questions? Clarke.

MR. WATSON: Yes, I had a question I guess of the gentleman who gave the last presentation (Dr. Slawson). My question is, Dick during his presentation mentioned that the reinjection wells were remote from the retort. My question is how remote are they? Is there some legal requirement in terms of distance, are we seeing this project reinjecting water so close that it's going to migrate back through the aquifer that you're repumping the same water? Is this whole process logical, is my bottom line question.

MR. EARNEST: Okay, the reinjection wells are located from 1 to perhaps 3 miles from the mine site, and just by the very nature of the cone of depression I would have to say yes, we have pumped some of that water more than once, and this is to be expected when you draw down an area as large as we did, that you will get some of this upper aquifer water which just simply has migrated into the mine and has been pumped out to be reinjected, and one of the reasons for the reinjection program was to maintain a relatively high water table in the surrounding area so our neighbors' springs and wells and things like that would not be adversely affected by our pumping down to dewater the mine area. What we've created is a cone of depression that instead of being in the classical very flat, tapering way out, ours comes in fairly flat and drops right off at the mine site, so we have pumped a lot of this water more than once but the purpose behind it was to not adversely affect our neighbors and their uses of water in the surrounding area.

DR. SLAWSON: One of the things that I would add to that is that originally when the dewatering was initiated right around the initiation of the mining activity, the water was discharged at the surface and a lot of that water was

running back down into the mine. In other words, we were just bringing it to the surface and then it was running a few hundred yards in the creek and then running back down into the mine, and that was one of the reasons that everything was moved to some distance away. You're always going to be doing something because you are putting the water up on top of the hill, if you will, and having your mine down at the bottom of the hill, and that is the direction some of that water is going to go. But the regional gradient is off to the east and northeast and so that is where most of the water is going at this point.

MR. WATSON: I guess the followup question to that would be then, since you've experienced a rather dramatic increase in the volume of water that's migrating into the retort, have you considered reinjection at a greater distance?

MR. EARNEST: We have not considered reinjection at greater distances. We have taken just the opposite approach as was mentioned, that we have reinstituted some of our close-in dewatering wells to force a drop in the water table immediately adjacent to the mine area to catch this water in the wells before it gets into the retort, and as I mentioned, the installation of these two pumps 2 weeks ago has resulted in over 25 percent reduction in the inflow into the retort, so we feel this is the most expedient and effective manner to handle this inflow problem until we can go into a total abandonment.

DR. SLAWSON: Much of the water inflow that we've experienced since the early part of the summer has been due to the extremely wet conditions that we have had this year. By midyear we were approaching the annual rate of precipitation during June sometime we exceeded what we normally get in a year, and we're hoping that that trend certainly doesn't continue, but that is a major part of what we're doing now. We're hoping that that cycle has moderated and that the inflow would subside somewhat just as a result of things starting to dry out.

MR. ASH: John Donnell.

MR. DONNELL: I have a question. You indicated in your slide that the water in A-groove is separated from the water in B-groove by the Mahogany Ledge, which presumably aquitard? Is that correct? And then presumably you have some minor aquitards between that and the alluvial aquifer. How come you get such direct communication after rainfall if you have these aquitards between the surface and the B-groove aquifer that you're concerned about. I can't figure this out. It sounds to me like you have direct communication all the way from the surface on down to the B-groove aquifer or into the retorts actually.

DR. SLAWSON: Well that's certainly what a lot of the data indicates. In addition this system is not only layered horizontally with the aquitards and then the fracture of the aquifer zones, but there's also a lot of faulting in the area and I suspect it's a result of those, that the faults leading to, you know, a vertical connection from the surface, the alluvial system, down to the aquifer zones. It shows the aquitards aren't perfect.

MR. ASH: Unless there is another burning question, let's cut these particular questions off for the moment and review just briefly that workgroup. Members

present today are Larry Sboboda from EPA, Clarke Watson, and Paul Ferraro. Jim Bradley is not here. Are there others that would like to participate in this workgroup session this evening specifically? Don Alvord. Anyone else? Let's take about a 5-minute break and you guys discuss what you want to do and when you want to get together and then we will reconvene to talk about offtract matters.

Meeting recessed at 4:05 pm.
Reconvene at 4:15

MR. ASH: I understand the Water Quality Workgroup intends to meet in this room immediately after the close of our general session.

MR. WATSON: That is correct and the Rio Blanco resource people are going to meet with us.

MR. ASH: Okay, fine.

MR. SVOBODA: Yes, we'd like to have the Rio Blanco people stay with us for a period of time so we can ask them some questions. And then the workgroup will continue after that period to discuss our position and recommendations for tomorrow.

MR. ASH: Okay, thank you. I will proceed to introduction of the off-tract disposal site issue, and again turn it back to the staff of Rio Blanco Oil Shale Company.

MR. EARNEST: Normally we would kind of share the grief here and let Larry Weiner give this presentation but he opted for age rather than beauty so you got stuck with me again.

In the way of background, Tract C-a was nominated and leased for open pit , mining and surface retorting. This activity was sidetracked back in the middle 70s when off-tract lands were not available for waste disposal, and in the interim the alternative of modified in-situ retorting was undertaken on the tract, and this demonstration proved to be technically feasible but the economics and the resource recoveries are really not acceptable to the Rio Blanco objectives. In December of '82 Congress passed enabling legislation which permits the Department of Interior through the BLM to lease to the Rio Blanco Oil Shale Company up to 6400 acres for use offtract for waste disposal, plant site, and any other activities which are directly related to the mining and the processing of the oil shale from Tract C-a. Now this offtract land is needed primarily to maximize the resource recovery within the tract boundaries. If the waste materials were to be placed on a portion of the tract itself, this would preclude the mining of these materials by open pit methods or it would require the very expensitve activity of rehandling to expose these areas for mining. These areas could be mined by underground techniques but the recovery rates for underground mining are considerably lower than for open pit. The uses which we envision for both the lease and the subsequent land exchange which many of you

have not seen in detail yet, are primarily to provide for overburden and processed shale dumps, the siting for the retorts and the various ancillary facilities, upgrading, storage, warehouses, administration, all of these necessary functions, all of which if located off the tract will improve the resource recovery aspects of Tract C-a.

A third item which we view as a very important use for these off-tract lands for the temporary stockpiling of the topsoil or topsoil-like materials which will be stripped from both the tract and from the dump areas themselves. These stockpiles will be temporary in that the materials will be used later on in the project for the reclamation of these dumps and the other disturbed areas. As I mentioned before, the option of on-tract dumping with the subsequent rehandling of materials really gives me heartburn.

The first slide will show the areas that Rio Blanco has selected for these various land transactions. The Tract C-a itself is shown in the center lower portion of the slide. There is a small, odd-shaped green piece right on the north end of it. This is land that Rio Blanco currently owns the surface rights to. This land was purchased from the Colorado Division of Wildlife a few years back. The 6400-acre lease is shown in orange, and this area takes in about two-thirds of the 84 Mesa. 84 Mesa extends on to the right probably over just about to the boundary of the slide there, in fact it does extend slightly over the boundary there, and that area in there was not considered at this time because it is currently under another mineral lease for the recovery of sodium minerals. The land exchange, which was mentioned before, involves the acquisition of approximately 2200 acres of public lands which are shown in blue and these areas are contiguous either with the tract or the proposed lease, and in exchange for these lands Rio Blanco owns the surface rights to a little over 2700 acres which are shown in the four brown plots to the north of Tract C-a. These areas are comparable in general characteristics. The general vegetative cover is not all that different, one site to another. The general difference, if any, is that the Rio Blanco-owned land contains more of the bottom lands, more valley bottoms which have an advantage from a grazing or livestock management aspect, and the blue areas are more of your upland Pinon-juniper type of thing. The four blue areas shown there, the little one off on the left, right in the center of Tract C-a, would be primarily used as the surface or topsoil stockpile area for the initial mine development. The area up along the northwest side would be again a stockpiling area for the topsoil from primarily the dump area and some from the mine area. The blue area immediately to the east or right of the green area would be again primarily surface stockpiles, surface being the topsoil again, and also the bottom portion of that would augment the plant facility area and would improve the access between the tract and the properties to the north. The little L-shaped job up on the east side there is adjacent to our air strip and would be used for two possible applications, the first being again the stockpiling of topsoil from the eastern end of the lease site during the dump construction phase and could conceivably, though at this point it is not the most popular subject, could be the site of a construction man-camp. It's something that we are not to the point of contacting Mark and his people in Rio Blanco County about, but nevertheless it's a consideration which we have neither settled on nor eliminated at this point in time.

The red line which meanders up around the left side of the slide and back down through the center of it is a contour line which generally outlines the 1,000 feet of overburden or the amount of barren rock overlying the higher grade oil shale, and you'll see that all of Tract C-a and the major portion of that to the north and especially to the east and to the southeast is in this area of 1,000 feet of overburden, and this will be of more interest as we go through our discussion here, and one of the critical arguments related to this 1,000-foot contour is that it is generally felt both by Rio Blanco and others that overburden of a thousand feet of thickness or more is really not amenable to open-pit mining at this point in time, and you might notice that the areas in the land exchange, the browns and the blues, are pretty well evenly divided between the less than and greater than so there is really no significant advantage to one side or the other relative to the more readily mineable materials.

In the likelihood that oil shale were to really take off and go, the most likely direction for development would be to the east and the south in the areas shown here, primarily because the oil shale deposits tend to thicken in that direction and Tract C-a, in one scenario at least, could form the embryo or the starting pit for an expanded oil shale industry in the area. This is a speculation and this could be many, many years down the line, but it is a point to ponder in the evaluation of what we are looking for here. You might notice that there is a fair portion of the orange 6400-acre lease which falls within the less than 1,000-foot contour. Incidentally, it is the inside of this red line that is less than 1,000 feet, and it is our plan at this time to use those areas primarily for the construction of our plant site. Now the plants are permanent to a point but they are far more temporary than the waste disposal piles areas themselves would be. The topsoil stockpiles are also temporary in nature so it is our feeling that the majority of that land shown within the less than 1,000 feet of overburden would be tied up on a temporary basis relative to the effects of stockpiling on them.

The question of 84 Mesa as a resource in and of itself has been raised many times in the past and will continue to be raised, and if one were to take 84 Mesa as a stand-alone area for open pit mining separate and apart from everything else, the depth over most of 84 Mesa is greater than 1,000 feet and it averages around 1250 feet. At this great depth due to the losses incurred in the slope of the pit walls the resource recovery from 84 Mesa would approximate 45 percent of the available material, so from this standpoint we don't see 84 Mesa at this point in time as being a really desirable area to consider for a separate mining activity. This opinion has been shared by others. The Oil Shale Office has published comments relative to this that are supportive of our position and the economics and technical questions are no different than they were 7 years ago when we addressed this problem in the first place. The plant siting itself, the next slide will show that a considerable area is required depending upon the rate of production that you might envision, and we picked four scenarios here that represent the two extremes and something in between probably being most likely. For a 30,000-barrel per day operation we need about 1200 acres for all of the various plant siting requirements and this escalates up to almost 2,000 acres for a 300,000-barrel per day operation. This accounts for a portion of the 6400 acres so the 6400-acre lease we're looking for is not all going to be available for dumping.

Now we'll move on into why we picked 84 Mesa as the preferred site for this activity, and the bases for this were environmental, operational, engineering, and economic considerations. The next slide will show the areas that were considered back in the mid-70s. The areas to the left of the Cathedral Bluffs are all areas that are off of the oil shale formation and for this reason they have certain appeals from the standpoint of not tying up resource. These areas are basically small, deep canyons with No. 6, up in the upper center representing Spring Creek as being the largest single area in the entire group from the actual volumetric standpoint. These areas being deep canyons represent some real problems in concerns for erosional and runoff problems. They are also, being generally higher in elevation, more susceptible to higher precipitation and also represent more difficult reclamation in that your conifer, aspen, mixed brush type of environment is much more difficult to reestablish than would your grass, juniper, and sagebrush type area be. The areas shown immediately west to slightly northwest and around to the south of Tract C-a are all on the formation, they are for the most part in the areas where the overburden is greater than 1,000 feet, and they also are over formations that are thinning and the grade is decreasing. But the same problems of canyon/valley fills with the propensity for localized thunderstorms and flash flooding making canyon valley type fills a concern to Rio Blanco. Also in all these areas mentioned there is also a conflict of ownership. All of the lands shown in the brown are not public lands. There are scatterings of private lands throughout the thing and in the Spring Creek area these holdings are substantial, as they are in the Area 10 along the south and east side, which is the Stage Springs draw, and the areas immediately west of the tract too are subject to the Ertl/Phillips claims which are unpatented at this point in time but litigation on those is apparently drawing down and the indications are not all unfavorable that these lands will indeed be taken over by the private sector.

Area 12 on the extreme right is located on a highland between Yellow Creek and Ryan Gulch. It is one of the two noncanyon valley fill areas. The area here is partially in the less than 1,000 feet of overburden area, and it also is limited in size. Now you'll have to recognize, or you do recognize obviously, that Area 9, being 84 Mesa, is not the same shape or even the same location exactly as the proposed lease. This is the result of this particular area consideration was made in 1974-75 timeframe and it has been refined as our needs have been more well defined. But the area is basically an upland, no major drainages through it, it is primarily sagebrush with some pinyon/juniper which aids in the ultimate reclamation, the lack of major drainages simplifies the problems related to erosion and some of the surface water problems which I mentioned on the earlier areas. Now these areas were evaluated using several criteria. In the area of environmental criteria the next slide shows the general categories that were used to evaluate all 16 of the areas shown on the previous slide, and these criteria were evaluated by consultants using a ranking method which we know as DARE, and I cannot tell you what the acronym is for, but the DARE study has been presented to the Panel back in 1975. Portions of it were included in the original DDP that was submitted in 1976, so it's not a totally new concept to the industry. Each of these areas was taken and broken up into a series of parameters which were then evaluated by people who had the expertise in the various areas, and the same criteria were used in all areas so that there would

be a consistency in the way they were ranked. In this they made parallelized comparisons with impact points being awarded for each parameter and weighted according to the relative importance of that particular category. The results of this evaluation are shown on the next slide, and they have been grouped. You see those four major groups with the upper group, Group 1, having relative scores between 9.7 and 8.9 on down through Group 4, which is generally in the 4's, and these groups were arrived at by a studentized Newman Keuls Multiple-range test, don't ask me to define that, I have trouble reading it let alone explaining it, but the gist of it is that within each group there is no statistically significant difference between any of the areas shown there. In other words, the statistically Rinkydink Gulch, 84 Mesa, Dry Fork, and Yellow Creek are all basically the same, and I should digress for a minute. I neglected to mention Rinkydink Gulch on the previous slide, but it falls within the tract boundaries and was used as a base case comparison for what if we did resort to ontract disposal? So from this we see the relative desirability from an environmental standpoint of these areas.

One thing that this evaluation didn't take into account was the volume sufficiency of these areas; that is, it was felt that the fewer areas disturbed would be more desirable as compared to having to combine several areas to accommodate the necessary volume, so another factor was applied, and the next slide shows the final site rankings environmentally based upon the criteria which we saw previously and adjusted for the sufficiency of the particular areas, and they took here and lumped some together which logistically are kind of far out, but they did meet the volume requirements. For example, in that second group there Dry Fork and Big Duck Creek are adjacent canyons, but Yellow Creek is the highlands 4 miles to the east, so it would make a rather difficult operational thing. As you go down through the list some of them get even farther out than that.

The basic concerns that we mentioned previously, the canyon valley fills, with the erosion and surface water runoff problems, are real concerns. The Cathedral Bluffs area also has additional concerns in that the prevailing winds along the bluffs are considerably higher than in the other areas and we could perceive the idea that there could be a serious wind erosion and air quality problem associated with some of these areas up along the Cathedral Bluffs.

Another criteria that was used in the final determination of the preferred site was to consider the operating and cost ramifications of these various areas, and here the proximity to the tract is certainly an important factor, the elevation difference - if you go over Cathedral Bluffs you have to elevate this material 1400 or 1500 feet perhaps before you can take it off down into the other side for disposal, whereas with some of the others the lift was minor or even negative.

Another consideration which any company must face is that an acceptable economic return be realized from the overall project, so costs are an important consideration along with the environmental and other operational activities. By way of a comparison, a study was made in 1981 and early '82 comparing just the costs for disposing of the processed shale and overburden from Tract C-a on 84

Mesa and comparing it to Spring Creek, which you recall was the major drainage on the Cathedral Bluffs side of things and northwest of the tract, that being the area that represents the largest single area as a deposit area. The study was based on a hypothetical operation of 100,000 barrels per day for a 30-year project, and the costs, capital and operating for 84 Mesa for this type of an operation for 30 years is about \$2.3 billion and Spring Creek in comparison is around \$3.6 billion, so you have about a \$1.4, 1.3 billion difference in just the operating capital costs of going over the bluff into Spring Creek as compared to 84 Mesa, and this is a real concern. The farther you go the worse it gets. If you were to go over the Cathedral Bluffs into the other areas mentioned further to the south and farther to the west, this 1-1/2 to 1 ratio would get up to around 3:1, so there are some significant penalties associated with some of these farther out areas.

Another issue that comes up and must be considered is the idea of putting this material back into the pit, and the basic concept is that once you start the pit all you've got to do is start filling it in right behind you. Well, it doesn't work quite that way. It's necessary that a pit backfill start at the bottom and work up, so it necessitates that you reach the ultimate bottom of your pit before you start a backfilling program, and this in the studies we've run indicates that it's around a 30-year operation at any production level before you reach the point where you have adequate room at the bottom to start backfilling. Once you start backfilling you can't backfill on a 1:1 ratio. The pit itself will be developed probably with pit slopes around 45° or one horizontal to one vertical. It may not be quite that steep but that is generally the rule-of-thumb that's used. On the other hand, the spent shale and the overburden materials placed back in the pit cannot be placed at a 1:1 slope. The ultimate slopes there may be as steep as 3:1, it may be as flat as 4:1, so you do not gain on your activity as you are backfilling in an initial pit operation. The only real benefit to come from pit backfilling is if you continue the operation on into another portion of the basin using the Tract C-a mine as a starter pit is that you can progressively gain more and more ground, but for the life of the tract itself, you just don't do it, you get about 12 to 15 percent of the total material out of the pit back in the pit for the life of the mine itself. It's a popular thing, on the surface it looks like a real easy way to take care of a nagging problem, but the logistics and things just make it not as nice as we would like to have it be.

I have a series of slides here that show basically what I have just described to you. The one that you had up there, Larry, the four items related to dump operations, in the construction of a waste dump, and I realize that for some of you the word "dump" may have negative connotations but my limited vocabulary is such that that's the best word - they are "dumps", whether you like the word or not, you can call them disposal areas, stockpiles, or anything you want, but they are pure and simple "dumps." So the waste dump operation has four basic phases, and these will be an ongoing thing progressing through the area. The first item won't all happen before the second one take place. We will prestrip and stockpile the topsoil-like materials that are on the areas that will be covered, and concurrent with this will be the construction of any necessary drainage control facilities. There are minor drainages through this area and

these will either be diverted or dammed, whatever the particular case demands so that the dump itself does not become a dam for any precipitation which may fall up-country from it. The dump construction itself we'll show in a little more detail here in a moment, but this is the major ongoing thing, it will basically be comprised of conveyors bringing crushed overburden and the processed shale to the area. In all likelihood a layer of the overburden material will be placed first to form a permeability barrier if you will, capillary barrier, between the top of the ground surface and the starting of the processed shale disposal. The processed shale and some of the lease overburden will be comingled and placed in lifts of perhaps up to 100 feet, depending on the method used and the slopes for these dumps will be a final 4:1, that's 4 feet horizontal for every foot of vertical rise, which is very flat. The flat slopes are used for two reasons, (1) it provides a more stable dump and it also minimizes the erosional effects that a steeper gradient would cause. The reclamation side of the activity would be a covering of the spent shale areas with additional overburden and placement of topsoil over that. These particular types of configuration are currently being evaluated on the tract. We have areas where we have taken spent shale from other activities, other companies, other areas, covered it with overburden material, then topsoil and vegetated it and this on-going program leads us to believe that we have the techniques and the knowledge to successfully reclaim the areas as they become dormant.

The next slide shows one of the concepts which we have looked at for dump construction using a large stacker in conjunction with the conveyors previously mentioned, and in this particular system we can build or dump off to the high side or the low side, as you will, going one way we can turn the thing around and build a lower bank back on the upper side as we come back and progressively migrate across the area.

The next slide shows a generic concept for this. The locations relative to the tract and 84 Mesa are not in keeping with what we are proposing for our lease now, but this was part of a previous study and it does show the way that these dumps would be built. In this particular drawing there are three stackers being worked. The upper half of the left-hand portion is one stacker working, the lower portion of the left side is another, and then one is working the large fan area to the east. This particular concept was based on one of the higher production rates. What we would do at the tract remains to be seen but this type of concept would be used to construct the dumps on 84 Mesa.

An issue that we need to address, and I mentioned this previously, is the volume sufficiency of an area. The area on 84 Mesa that we are proposing will accommodate approximately 3.9 billion cubic yards of waste material. If we include the land exchange where we are able to take land that would have been tied up in the topsoil stockpiling and switch that over into usable waste disposal areas, we can raise this about 10 percent, up to approximately 4.3 billion and this slide shows that this is not enough, but not enough is something that is several years down the pike, and we can't concern ourselves today with an ultimate requirement that far exceeds anything that is available by today's reckoning. We see here that the tract will produce about 10.5 billion cubic yards of material over the life of the entire project with 3 billion of this coming from overburden and the

remainder from processed shale, and falling back to the mine backfill issue for a moment, we see about 1.3 billion or about 12 percent can be placed back in the pit, leaving about 9.2 to be disposed of elsewhere, and about half of this is directly placeable on the 84 Mesa area that we have specified in this lease application.

If the entire 84 Mesa, just as a point of information, were to be available, which it is not at this point in time, we would be able to increase the amount of material on that area from the 4.3 up to something approaching 6 billion cubic yards.

Okay, this gets back to the concept of when can you start backfilling a pit, and I apologize for these being out of order, but nevertheless they are germane even though they are late. This is taking the lower base case of 30,000 barrels a day that in 30 years you would have a pit that would take up less than a fourth of the tract and you would have just barely reached the bottom of the ore formation in 30 years, so this is the point at which backfilling could conceivably begin in this lower scenario. The next slide shows a much more ambitious program where we would go into a phased-up operation where we start at 50,000 barrels a day and every 5 years increase it, doubling it to 100 in 10 years up to 20,000 and at the end of 15 years would be producing a 300,000 barrels a day, and we see at the end of 30 years we have again reached the bottom of the pit. The expanse of the pit is far greater because of the larger amount of equipment required to mine that thing. You just can't bunch everything up in a little corner when you are mining at these rates. Three hundred thousand barrels per day equates to something over half a million tons a day, if you consider the waste stripping as well it's up closer to perhaps three quarters of a million tons a day, so you need a lot of room to operate, so at the end of 30 years you have again reached that point in time when you've got adequate room to start backfilling.

The next slide shows where you might be 10 years hence if you started to backfill at year 40 you could conceivably have started your backfilling keeping in mind here that the top of the brown is about 1500 to 1700 feet above the orange, and the top of the blue in this picture is only 450 feet above the blue, so you see the rate of backfilling is very slow, that flatter pit slope really slows you down but for safety considerations there is really no alternative to taking it at a relatively flat, slow rate.

In conclusion, Rio Blanco's position is that 84 Mesa is the preferred site based on environmental, operating, and economic considerations. We have through research work done to date established the fact that stable, relatively impermeable dumps can be constructed, permeabilities down in the range of 5×10^{-4} centimeters per second have been demonstrated in lab work. With slightly different handling techniques this can be improved somewhat but nevertheless it has also been shown that some of the water migration problems are not necessarily as severe as predicted in the past. Rio Blanco is currently performing additional work in the area of water migration through waste dumps and this work as the results become known, we will put those into our planning as well, but the indications to date are that migration downward through the pile will not be a significant problem and that if it does make it mitigation will be possible

without an awful lot of effort. The reclamation is far more feasible in the 84 Mesa area with the sagebrush, pinyon juniper and grassland as compared to the higher elevation areas which were considered previously. 84 Mesa, as we have delineated it at some point in the future, may be amenable to extension to the east if the sodium leases are mined out or whatever. There's a possibility, I'm not saying that we're going to do it but the possibility for expansion exists. The area is controversial, but we feel comfortable with the work we've done, we feel it is a defensible position and I thank you for your time in hearing us here today.

MR. ASH: Thank you. Questions? comments? Clarke.

MR. WATSON: That was a very thorough presentation. It seems to me that we have really discussed this 84 Mesa issue and the off-tract siting issue for a number of years and it was debated at great length prior to the enabling legislation that occurred in December. At that time there were people very adept at raising all of the issues that needed to be raised in terms of why that legislation shouldn't go forward. But as a result of cooperation between both Senator Hart and Senator Armstrong's office, they too saw the wisdom, as did their staffs, as did the people who attended those hearings. I would be amazed if there's a single person on this Panel who would not concur with Rio Blanco's desire to proceed in the direction as they've described today. The logic is flawless and it certainly is necessary. I can think of no reason why we would have to devote more than the amount of time it takes for us to just say Well we concur and move on. Thank you.

MR. ASH: Being a good bureaucracy, however, I wanted to address a question or comment kind of to BLM. It kind of relates to what you're saying, Clarke, and that is I think some of us, including myself, are kind of having a little difficulty defining just what is the issue that's put to the Panel in this matter? The legal issue have now been resolved. Eight years ago that was talked about and the Panel really deferred taking a position because the legal issue was not resolved yet. We did have the DARE report presented to us and there was a lot of discussion. That's certainly true. The Panel's role is to review and advise on environmental aspects of the proposed action. It seems to me we've got the offtract lease presented to us, we've had that given to us for our review. We've been made aware now of the exchange. We don't have that as an action before us, but we're aware of it, and I'm trying grapple with just where is the Panel's role in there, and what position might it take. Are we being asked to consider them together, separately, or should we take a position that says you do one or the other? Should we, the Panel, take a position on how to assess it? The Panel would certainly say, Comply with NEPA. Then the question, is the environmental assessment adequate? Is a full-fledged EIS needed? Should the Panel take a position on that? And again on whether on each action separately, on the combined, it's a package it appears to Rio Blanco. Those are some of the things that I'm not just sure where BLM really wants our advice. And then to move on beyond that, beyond those major general points, the Panel can, and I think probably should at least consider, whether it wants to say anything about specific environmental aspects which might be stability of the pile, dust, air quality, particulates, wildlife, rehabilitation, the oil shale resource beneath

the 84 Mesa. We've been made aware that there are parties in industry that are very concerned about 84 Mesa being used for a disposal site. Another thing I think that is maybe not all that clear, is what is the timing for this. We know on the MIS abandonment plan, that's kind of critical. We should certainly try to arrive, I think, at a position on that tomorrow if at all possible. But I kind of bring those things up to BLM and we'd be delighted to have some more guidance and the lead for us is in the workgroup chairman, and I'm sorry if I've been preempting you, Steve, but Steve Utter is Chairman of our C-a Workgroup. But do you have any reaction or response to those comments or questions, please?

MR. CARIE: Yes, I will make a reaction to them. My understanding of the Oil Shale Environmental Advisory Panel was basically to discuss the environmental issues of a post-lease situation. The role of the Regional Oil Shale Team is basically to discuss the prelease situation on oil shale leases. So we're seeing, I think, a possible duplication of effort between the ROST, (Regional Oil Shale Team), and the Oil Shale Environmental Advisory Panel. The kind of advice I would like to see the OSEAP, this panel here, make, is the environmental concerns we would have over whatever action we would take. For example, what would be the environmental concerns with leasing 6400 acres on 84 Mesa. What would be the concerns of the social impacts, perhaps, the air impacts, the wildlife impacts. Those are the kinds of issues, Hank, I think this Panel here could help us with.

On timing, Curt Smith touched on that a little bit earlier this afternoon. We are currently doing an environmental analysis on what we are calling the 84 Mesa off-site lease and we're moving along fairly rapidly on that. Our initial draft, Curt, I think is to be out within a couple of months, by December 11 I believe. We'll have our first cut on the environmental analysis. That's on the offsite lease.

MR. WATSON: As I understand it, the EIS that was done was inclusive of all those areas and those scenarios, so are you certain that it would be prudent use of time to go back and then do an EIS for that one single area?

MR. CARIE: That's a very good question. Yes we do. The original work was done I think back in '73-'74, in that era anyway, and the meetings of OSEAP, and I can't think of any other group that studied that situation, is now measured in a plus 5 years timeframe, so we thought it would be prudent to take a look at it at this later date.

MR. ASH: Specifically, Clarke, 84 Mesa was not considered in that '73 final EIS. The concept of offtract disposal was, and certain areas were identified.

MR. CARIE: That's the major point. 84 Mesa itself was not examined in detail in the '73 EIS.

MR. MADSEN: I have a question. In your transmittal memorandum to the Panel you say that "No occupancy of the lease will be permitted until a plan of development is submitted by the lessee. What do you mean, are you going to issue a No Surface occupancy lease?

MR. CARIE: No, Lowell, any lease we issue would be, I don't know the legal term, but it would be a fully operational type lease. It would have no No Occupancy clause in it. However, the fact is they wouldn't be able to use the lease until the company had completed their detailed development plan.

MR. MADSEN: So once the lease is issued you're fully committing whatever land you lease to development as a spent shale disposal site.

MR. CARIE: Yes.

MR. ASH: Hal.

MR. BOEKER: Lee, I was wondering, have you any indication at all that you're going to be challenged on your decision to go ahead with an EA instead of an EIS?

MR. CARIE: There have been some indications from groups and individuals that they are questioning the wisdom of going with an environmental analysis instead of a full-blown Environmental Impact Statement, but we feel on fairly secure ground, with the data we have, that an Environmental Analysis is the way to go. We think with the work that has gone on before, the review it's had, the knowledge that the public has of the action, that an Environmental Analysis is meeting all the requirements of NEPA for the offsite lease.

MR. BOEKER: You would be surprised if there were a legal challenge of that decision?

MR. CARIE: No, I wouldn't be surprised at a legal challenge on anything that BLM does any more.

MR. MADSEN: Lee, are you contemplating that perhaps an EIS would be necessary when they file their Detailed Development Plan - is it a deferral of an EIS. Is that what you're going to do?

MR. CARIE: There will be further analysis made, Lowell, at the Detailed Development Plan stage. I don't know if it's going to be an Environmental Analysis or Environmental Impact Statement. We will have to meet all requirements of NEPA at the DDP time, though.

MR. FERRARO: I am just curious as to the urgency of getting this lease in such a short timetable to get through the EA and make a decision, whereas, unless they have got to have this before they can move to the next order of development - that's the question that the State people have.

MR. CARIE: The timing - the relatively short time frame?

MR. ASH: We might ask Rio Blanco about that.

MR. LIEBER: I'm sure this question really hinges around the next question, which is What do we plan to do and I can't stand here and tell you that as soon

as we get that land that we are ready to march out there with a construction force and start to build something. I think you've all heard here today from other people that without Government incentives etc., right now oil shale doesn't look very good. However, I don't think we're really not asking for something to be hurried up; we've been trying to get this offtract land since 1974, and we're almost 10 years later and we think it's probably about time that we do get it but what we would do with the land if we had it, once we know what land we're going to have, what we can do, we can then begin to do our engineering planning and begin to have some plans available so that when the time is right to go to construction we know specifically what we want to do. Until we can get that land and know what it is that we have, we really can't make any detailed engineering plans, and that's irrespective of whether you're planning on constructing something immediately or not.

MR. WATSON: Then, I don't want to get into Roberts or Parlimentary procedure, but taking all of that background into consideration and the very cogent questions that you raised, Mr. Chairman, again I would assert that probably we could help facilitate this process by adopting the position that absent any tremendously adverse reflections in the EA that we certainly favor the concept of their off-tract plans, their land exchange and the 84 Mesa unless at some point in time something terribly adverse should surface.

MR. ASH: Let's ask our Workgroup Chairman, or at least allow him to get a word in here edgewise.

MR. UTTER: Well I was interested in what kind of input we would get. Frankly I'm puzzled, at just what we're supposed to do. You raised that question too, with this plan, which is not in detail at all, and I don't even know - are you following essentially the same mining and waste disposal plan that was proposed back in the original DDP?

MR. EARNEST: To the extent that we are again contemplating open pit mining, yes. Some of the ideas relative to the specific plan for mining have changed. We've looked at more of the state-of-the-art, high-volume type things, in-pit crushing, conveying out, as compared to the earlier work which was primarily truck it out to the top and go that route. The dump construction has changed too. I think initially they were looking at at least truck placement, perhaps conveyor to the area, but the actual building of the dumps would have been by more conventional methods. The stacker concept is relatively new in the Rio Blanco planning, it's a state-of-the-art thing in many parts of the world and it's not something that's just right off the drawingboard. The work that has been done relative to the nature of the processed shale itself, the moisture requirements, the strength, the stability, the permeability, all these things are better understood today and we are taking more liberal construction approaches than we would have previously. The old lay down the lifts and maybe even compact type of thing really aren't in our thoughts at all right now.

MR. UTTER: You're planning, as I understand it now, on the Lurgi process?

MR. EARNEST: Lurgi certainly is one of the major considerations at this point in time. That is the processed shale that we've used in our evaluations. The

nature of other processes of the shale will be slightly different and I'm sure we're all looking very closely at Parachute right now to see what Union is going to do and how they're going to do it, and while we are currently involved in Lurgi demonstration pilot plant work, it's not fair to say that that is THE ultimate or final decision of Rio Blanco. Right now we don't know for sure that Lurgi will be the process, but it is as good a bet as any right now.

MR. UTTER: As I recall, the original plan was based on TOSCO II and maybe Paraho or something like that, which would be somewhat different I would think.

MR. LEONARD: Well very definitely the TOSCO II is an indirect thing. There is very little, if any, self-cementing capabilities involved with it. Paraho exhibits a degree of this. The Lurgi shales demonstrate a very significant tendency to be self-cementing, which is one of the things that makes our statements relative to dump stability and permeability applicable today, is the nature of that particular shale, and certainly Lurgi is far different than TOSCO II from that standpoint.

MR. UTTER: See, this is the type of information that I think we should have, some place in the process before we can come up with any recommendations. Another thing that concerns me is the problem of the total volume you're talking about - 10.9 billion cubic yards, and then the area requested would not contain all that amount. Eventually, if you're going to mine the whole resource you would have to have more land or some place to put it. It seems to me that you certainly can't go into a lot of detail on something like that, but I would think that the plan would look at the complete mining and waste disposal from start to finish.

MR. EARNEST: Perhaps there is a desire here to let our grandchildren worry about part of the problem, but the timing on this is one of the big unknowns. It's something that you pick a scenario, whether it be 50,000 barrels a day or 300,000 barrels a day and the timing can run from literally hundreds of years down to 50 years for the life of the project, and to tie up everything for something that is that far down the line really doesn't strike us as being essential at this point in time. I think, in my own mind, that typical of all mining ventures that you take what is economically feasible today, saving for tomorrow those things which aren't attractive today, and when the need presents itself you go after them. I use the iron ore industry as an example here, where 30 years ago virtually all of the ore mined in this country was termed natural ore, it was a fairly high grade, it had been naturally upgraded, and it was just mined and shipped to the blast furnaces. The lower grade taconite materials were waste, they were just in the way, they were a nuisance. But the day came when there was no more natural ores and technologies were developed, taconite is now the primary source of ore, magnetic taconite. The next thing that will come along is nonmagnetic taconite. So these things tend to progress and I think our total life of the project disposal problems fall into the same general type of a category, where you do today what is necessary to accomplish your goals and as conditions change the means are created either economically or technically to use alternative sites, sources, or whatever.

MR. UTTER: I think your point on iron ore and taconite is well taken.

MR. WATSON: If I could just renew that concept, which simply takes into account that this is a decision that needs to be made but it doesn't denude us of the ability to monitor the effect of offsite, and again, and I understand Carter's anxiety in this area, that we don't run willynilly into it, but we've been at it for a number of years. If we wait for all of the answers to be resolved, we'll never move forward. But I think we retain the ability to say if we see something that's highly inappropriate, then we can say at that point in time well we think there should be some modifications to this approach with regard to offsite, but I think that if we support the general concept of offsite disposal then we should be on record on that point, that's what I'm saying.

MR. ASH: We'll certainly have an opportunity to do something like that if we want to, Clarke, tomorrow. Dick Lieber wanted to add something to this.

MR. LIEBER: Thank you. I just wanted to add that of course when ultimately we have a concrete plan and it comes in in the form of a Detailed Development Plan, then of course this committee would be in the business of specifically approving a specific plan for disposal to make sure that that dump is going to be safe and it's going to be environmentally sound, and so this is not the last time that you would see this type of thing. On the other hand, I would hate to see the Panel count on their evaluation and approval of 84 Mesa based on a particular type of shale. I don't think you should do that, based on a Lurgi shale. I think you should take a look at these various areas from an overall, general point of view as to where you think is the environmental concerns of one versus the other, but not count on a very specific type of shale. And our view is we think that what we put forward here for 84 Mesa would hold for any type of shale, and probably even more so for other types of shale. But nevertheless I would hate to see somebody feel here that we're committing that what we're going to do is put Lurgi Shale on 84 Mesa. We cannot promise that at this point in time. But what we can say is that when we do know what we want to do for sure we'll be back in with a concrete plan for you all to approve.

MR. ASH: Dick, thank you. I think that helps us put it in context looking forward to another DDP. Bob Leopold hasn't had a chance and he's been ready to say something for a while. Bob?

MR. LEOPOLD: Yes, as to the specific question of what BLM would like to see. No. 1, I think there are two things that I would like to mention. First of all, I think you have to go back to the charter of what OSEAP does, and Lee very succinctly put that in that 's post-lease responsibilities. Two questions that I do have that I'd like to see answered by the Panel. No. 1 is this: recognizing that the only sure thing is death and taxes, I have this question. What we've seen today is a presentation by Rio Blanco Oil Shale that synthesizes not only the off-site but the exchange and my question would be this: is there a need for an exchange? And I say this by some of the studies that I have seen and working with several of the organizations such as American Petroleum Institute, American Mining Congress, etc., their studies have indicated that to efficiently run an off-site operation and a total mining operation, you need

approximately between 8,000 and 12,000 acres of land, recognizing the first comment that I made, that there has to be flexibility built into this and no sites are the same. I'd like this Panel to take a look in a comprehensive manner and make a recommendation to the Bureau is there a need for an exchange? I don't necessarily care about the locations or anything else, but what is the relationship between the off-site leasing legislation that was passed in December and that of the proposal that we just saw, roughly for 2200 acres. My second question would be this: what is the recommendation of the Panel since this is probably the most comprehensive organization we have in terms of NEPA compliance, what would you recommend to the Bureau and to the Secretary for the most efficient, effective way to study in terms of NEPA compliance what was presented today by Rio Blanco's organization?

MR. CARIE: Maybe I can add something to Bob's comments. In the exchange process there are certain steps that must be done before we would want to do any environmental work, things such as making sure we have a feasible trade, a feasible exchange proposal. To do that we would have to look at all the resources that are on both the selected lands and the offered lands. Sometimes we find that an exchange is not really in the public interest when looking at all those resources, or it is not acceptable in its proposed form. There are other modifications to the exchange that must take place. Another factor we must look at is what we call a preliminary estimate of value, the appraisal, to see that the values are pretty much the same between the offered and the selected. That's not as critical now as it once was, but it is still something we have to go through to see that we're in the ballpark as far as the dollars are concerned between the offered and the selected lands. And another aspect or factor we have to look at before we can decide to go with an exchange is if the proponent indeed owns the land. If its encumbered to the point that we don't even want it. This is usually done through a title search. We search the records to see that the title is not encumbered to the point that we couldn't live with the trade.

Now to do at least these three items does take a little time, and that's probably the one thing now that gives me some problems, is that we're progressing fairly steadily on doing the environmental analyses on the lease offer, and if we were to stop that effort to take very much time to see if we should have the exchange included in the lease analysis, may be too long. We've got a crew of people now working in Curt's office, they are working daily on this environmental analysis. That's in response, Bob, to your request to ask this group to consider whether we should do the exchange in conjunction with the lease.

MR. LEOPOLD: I didn't specifically ask that, Lee. I think it's good that you gave the background to this, but I think with the expertise we have in NEPA compliance is right here. They have to gain that background in order to understand these complex issues that are in front of us right now.

MR. BOEKER: Mr. Chairman, have you distributed background information on the exchange proposal?

MR. ASH: No, I have got one copy of the proposal. We had hoped to get it before this meeting but we haven't gotten it. I don't know how soon we could have it.

MR. BOEKER: I have seen nothing on it.

MR. CARIE: Maybe I should address that. The application was sent to my office a couple of weeks ago. I think it was received in the early part of October sometime. We simply haven't had time to look at all these issues that I've raised, before I felt comfortable in bringing it to this group here. We haven't gone through all of these administrative things, date stamping it in and all of those things right now.

MR. ASH: Lowell.

MR. MADSEN: Well with all due respect to all of the technical people on the Panel who are a lot smarter than I am, whether or not an EIS or an EA is needed in this regard, with respect to the issuance of an off-site lease, is legal conclusions, and I don't think we have enough facts before us right now to give any guidance to any lawyer as to whether or not an EA or an EIS is necessary.

MS. KEYES: Mr. Chairman, I want to concur with that also. I'll make an apology. The gentleman who has been sitting with me in Highways has an suddenly been transferred to the great city on Chesapeake Bay and we have not had a chance to look at this, and that was his comment back to me, that as far as Transportation was concerned that that needed to at least look at some of the facts before, whether Yea or Nay, they felt they needed to see some of the facts on this as far as impact on Transportation assessment, etc. And that was his question, was it going to be EA or EIS.

MR. ASH: Larry.

MR. SVOBODA: Yes, I have just one quick question. When you say you are moving ahead with an 84 Mesa lease, will you develop a new set of environmental lease stipulations for that lease, which will be enforced in the same way that we dealt with it in the past, with the prototype program?

MR. CARIE: What do you mean by a "new" set of stipulations?

MR. SVOBODA: Well the 6400 acres that they're entitled to, it was decided in a different way than we've proceeded in the past with the prototype program and it's going to happen quicker than before we see a permanent program. So its sort of an anomaly in many ways than the way it was dealt with in the past, with respect to environmental lease stipulations and things of that nature that this Panel is responsible for. I'm just asking to confirm that those environmental lease stipulations will be developed for the lease.

MR. CARIE: Yes.

MR. MADSEN: I just want to caution people that this is not a sure thing. The Secretary still has the discretion, as I read he says he may issue the lease. He has to consider a lot of things, one of which is the need for leasing and the impacts on the environment and other resource values, and that is what I would assume is going to happen when you do the EA, to see whether or not you need an EIS.

MR. CARIE: Yes, that's correct, Lowell.

MR. ASH: It is approaching 5:30, and I would propose after this enlightening discussion to let our workgroup wrestle a little further with this matter this evening and perhaps they can come back with some recommendations to the Panel as to the position it should take and when or what it might want to do in the future on the whole matter. Am I cutting anyone off? Paul, you have a comment?

DR. KILBURN: Well as one of those illustrious members of the workgroup tonight, I'm not sure of what I am going to be supposed to do, but the question I really have first of all was, is this workgroup on Rio Blanco to assume that the lease tract outline, that the lease location is set in concrete and that it is not our responsibility to worry about that, is BLM doing that in its EA procedure, for example.

MR. CARIE: I'm sorry, I missed your question.

MR. KILBURN: Is the lease location fixed for our purposes?

MR. CARIE: No, that's one of the things we're doing an environmental analysis on, is looking at the alternative sites also. I think we're going to rely very heavily on what Rio Blanco Oil Shale Company has already done in their DARE study, what we call the DARE study, but no, it's not fixed. I'm sure there will be some discussion between Rio Blanco and my office on the exact location, the acreage, there are some questions in my mind on the configuration of the lease tract. Maybe it could be a little different shape. We've got to look at their fee-owned land, how that's going to enter into the facility for their plant site, the facilities. No, I would say it's a proposal made by the company and we haven't had a chance yet to run our configurations on it.

DR. KILBURN: And by "we" you're talking about this committee or the BLM? What I was concerned about is what is my responsibility this evening in this meeting.

MR. CARIE: Excuse me, I was talking about the BLM, my office.

DR. KILBURN: Well then maybe I could ask the Chairman before we adjourn what is our responsibility in terms of location of the lease site.

MR. CARIE: Mr. Chairman, may I suggest that perhaps that could be a question to be addressed by the group. What should the role of this group be? Maybe that's the workshop question for tonight.

MR. WATSON: Well, Mr. Chairman, I don't see how that really goes to the salient question, though, which is the lease itself. I think perhaps we should not be considering the land exchange. I think that to roll all of those things together certainly does complicate matters, but I think we should look at the feasibility of the lease at the proposed site and make a decision on that.

MR. ASH: Responding to your question, Paul, that is what is proposed, that is what we would look at. We wouldn't be precluded from suggesting some con-

sideration of change, but now that's the proposal we were asked to look at and that's what we will look at.

MR. CARIE: I would further suggest that the Panel might be wanting to take a look at the environmental analysis when we get a draft completed on December 11. That's how I see the Panel working, as looking at the environmental work we're doing and suggesting.

MR. ASH: That certainly could be the Panel's position that we would defer any formal position or advice until we see that. Often in the past on some similar action we haven't actually seen them until the EA was done, and then we had the benefit of the EA at the time, because the Panel members just don't have the time or the opportunity to do all the work that your technical staff can and will do before you complete that EA.

MR. CARIE: I would concur in that.

MR. ASH: But we were given it to look at at this meeting, and we have it, and I think we should at least kick it around in this workgroup this evening and come back tomorrow. Steve, when is your workgroup meeting, and could we ask Mr. Madsen to sit in with us for legal advice?

MR. UTTER: I'll poll the workgroup immediately after the meeting today closes, and we'll come up with a suitable time and place.

MR. ASH: If there are others that particularly want to sit in on this workgroup from the Panel, let Steve or me know. I'll try to keep track of what's happening, too.

Is there anything that is a burning issue that needs to be resolved this afternoon before we break for a workgroup meeting? If not, we will recess for this evening and reconvene promptly at 8:30 in the morning.

Meeting recesses at 5:30 p.m.

Thirty-eighth Meeting of Oil Shale Environmental Advisory Panel
Grand Junction, Colorado, October 27-28, 1983
Thursday, October 28

Meeting called to order at 8:35 a.m. by Henry Ash, Chairman

MR. ASH: I'd like to reconvene this thirty-eighth meeting of the Oil Shale Environmental Advisory Panel. I trust you all had a pleasant evening. I know the workgroups worked diligently, both of them, for quite some time last evening and we do appreciate the dedication of the members willing to do that in the evening. I understand that checkout time is noon here. If you think you may checkout a little later, you can make arrangements, I think, for a late checkout. I would like to open the meeting this morning by introducing Mr. Steve Gottlieb of the Synthetic Fuels Corporation in Washington, D.C., who is, I believe Director of Environment. We're very pleased to have Steve here to speak to us. We've tried on several occasions in the past to get someone from SFC and we're really delighted to have you, Steve, and I will just turn it over to you and welcome you to the thirty-eighth meeting of OSEAP.

MR. GOTTLIEB: Thank you very much, Hank, it is a pleasure to be here at this thirty-eighth meeting, my first. I have just some relatively brief prepared remarks and I want to allow as much time for questions to make sure that I cover all the areas that may interest you, of which I have any knowledge, and make some copies of these remarks available later.

I am delighted to be here today to discuss several matters of common interest between the SFC and this Advisory Panel, and I assume that all of you are generally familiar with the Energy Security Act which established the SFC, so I will not discuss the requirements of the Act. Instead, I would like to focus on two areas which I expect are of particular interest to you. First, I want to provide you with a status report on western shale projects which are seeking financial assistance from the SFC, and second, I would like to discuss the SFC's recently adopted Environmental Monitoring Guidelines and project activities under the Guidelines. Because project-specific matters, including monitoring outlines and monitoring plans are under review and negotiation at the present time, you will understand that I cannot discuss certain details of our activities.

With regard to the present status of western shale projects, and I am sure in many cases I'm not telling you anything that you don't know, the Corporation is currently conducting negotiations with the sponsors of five projects - Cathedral Bluffs, Union Oil Phase II, Paraho-Ute, White River, and Seep Ridge. I am sure you are aware that this past August the Cathedral Bluffs Project received a letter indicating the Corporation's intent to provide assistance if mutually agreed upon conditions are met. In addition, it is anticipated that the Chairman will sign one or more letters of intent at the December 1 Board Meeting upcoming. There were a couple of questions as I came in as to whether any significant decisions were made in the shale area at the Board meeting just ended, and there were not. Once the basic provisions are worked out in what we refer to as our term sheets that accompany each letter of intent, it takes several months to come to an agreement on all terms of the

financial assistance agreement and to document the transaction. Consequently, we expect final agreements with western shale projects to be approved beginning early next year.

As you know, these projects are in active competition with one another, and it is clearly not possible to support all of the western shale projects currently in negotiation. I cannot predict which of them will ultimately receive assistance and proceed to construction. I can, however, outline the major factors, not in any particular order of importance, that will determine the outcome. The first is the amount of financial assistance available for shale projects. The Corporation has previously indicated that \$4.8 billion was the likely portion of SFC obligational authority needed to support a proper mix of shale projects. This figure is an estimate and carries no statutory weight; the Board can always choose to raise the amount allocated to shale, and thereby provide less assistance to other resource areas, if a number of shale projects are particularly attractive.

Second is the requirement to select projects that require the least amount of assistance per unit output, taking into account the unit value.

The third factor is the production requirements of the Act, which call for 500,000 BPD (Barrels per Day) of synthetic fuels production in 1987, and 2,000,000 BPD of production in 1992. While we certainly do not expect to achieve these optimistic goals, substantial production remains an objective in our selection process.

The fourth factor is the diversity requirement of the Act. The Energy Security Act directs the Corporation to achieve a degree of diversity in both resource base and conversion technology in the projects receiving assistance.

The final major factor that will determine which projects receive assistance is the ability and willingness of the sponsors to meet all terms of financial assistance, such as providing the required equity and submitting an acceptable environmental monitoring outline.

In sum, the factors which I have just listed will be considered by the Board over the next several months in making its final decision on which shale projects to select for financial assistance.

Let me now turn to the area of environmental monitoring. Our Board of Directors adopted Final Environmental Monitoring Guidelines on July 28, 1983. The staff then prepared a preface explaining the changes which were made to the Interim Final Guidelines which had been published earlier. The Final Guidelines and the accompanying preface were published in the Federal Register on October 13, 1983. I have several extra copies, and I just want to mention that there are some 35 little mistakes in there (none of which of course we were responsible for). The Federal Register I don't think has a computerized operation yet. They simply pick up what you send them in typing so we are going to seek to have them republished in the Register, due to the large number of errors, but few relate to anything significant. At any rate, these

Guidelines are the result of extensive efforts by the SFC staff as well as input from both the consulting agencies specified in the Energy Security Act and the many interested individuals and groups who responded during the public

comment period. We have sought to develop clear and practical guidance on the necessary procedures and broad substantive areas which should be addressed in developing monitoring outlines and plans. At the same time, we have carefully tried to avoid making the Guidelines so specific that we would, in effect, be dictating the contents of the outlines and plans. The development of the terms of the outlines and plans are the sole responsibility of the sponsor, in consultation with EPA, DOE, and the appropriate state agencies.

Time does not allow for a detailed discussion of the Guidelines, so I would like to highlight several points which are of particular relevance to the Federal leasehold projects, White River and Cathedral Bluffs, which are now before the SFC. The Final Guidelines specifically state that monitoring under an SFC-approved monitoring plan should not be redundant with monitoring required by Federal lease conditions. We recognize the fine efforts made by DOI, the sponsors and others in developing the lease conditions, and do not want to require monitoring that is virtually identical to that already required. We will, of course, be interested in the results of this monitoring and shall request copies of the data. These data will assist us in preparing our annual reports to Congress on the environmental impacts of projects receiving SFC support and also in meeting our broad obligation to "develop an information base for the mitigation of problems associated with the replication of synthetic fuels projects", to quote from the Energy Security Act legislative history.

The Guidelines provide that monitoring outlines should be found "acceptable" to the SFC's Board prior to final approval of a financial assistance agreement. At the present time, both Cathedral Bluffs and White River are on schedule with regard to their outlines. Both have submitted draft outlines for consulting agency review and the agencies have provided, or will provide in the very near future, their initial comments. I would point out that because Cathedral Bluffs has already received a letter of intent, review of its outline will have priority over non-letter of intent projects such as White River. We look forward to the development of sound monitoring programs for both projects. I would add that our general approach has been to make all monitoring outlines and plans publicly available and to accept comments thereon. Consequently, we are particularly pleased that White River has taken the initiative to make its outline available to this Panel, at least I understand that it has, for its review and comment because of the Panel's expertise and diverse membership.

I cannot conclude without indicating my pleasure at how well I believe our consulting agency process has worked up to this time. The agencies have been performing thorough and expert reviews of the many outlines which have been submitted and have provided detailed comments to the sponsors and the SFC at each stage of the review cycle. There has been a great deal of constructive give-and-take during these reviews and, as a general rule, a meeting of the

minds as to what should be included in the monitoring outlines. Any comments this Panel may have on White River or other shale projects I am sure can only improve the quality of these documents.

I have not provided time to discuss other environmental matters of mutual interest, notably water availability and socio-economic impacts, which my office is deeply involved in, but I would be delighted to answer questions in this area, as well as any other questions on matters I have covered.

As promised, I would like to keep it very brief and let's open it right up.

MR. ASH: Thank you, Steve. We will do that, open it to questions from the Panel, and as you mentioned, we have seen the White River Environmental Monitoring Outline, and if any members have comments they might offer, comments on the process to Steve, it would be appreciated. So I will turn it back to you and let you field questions from the Panel.

MR. GOTTLIEB: Before we open it, looking at Jim in the back, his graciousness in making it available should not burden him with feeling that there are going to be an unlimited number of comments coming from miscellaneous sources. Frankly, I think you ought to talk to him first rather than to me, because we are fairly strict about not letting our process get out of hand with more than the statutory selection of agencies to give comments.

MR. BUBRISKI: Steve, with respect to the C-b project, I know last week in Phoenix no formal decisions were made on any of the western shale projects but C-b in the past month or so, I think, has requested the SFC to waive the requirement for additional equity, partnership, etc., in the project. Has that been discussed, accepted, delayed, or is that going to be part of the discussions on the December 1 meetings in Washington?

MR. GOTTLIEB: It has been discussed, Mark, and I guess all I can say is that it's under study right now. No firm decision has been made, but I assume that at the December Board meeting if not before there will be some further discussion and a decision.

MR. NICHOLSON: Has the SFC considered publishing any guidelines on socio-economic monitoring?

MR. GOTTLIEB: We have not. Of course socioeconomic monitoring, unlike other environmental monitoring, nonsocioeconomics, is not required by statute, and we felt as a result of or the consequence of the statutory requirement, we wanted to get guidelines out on what I call other monitoring. I guess I feel that with the good work that the States have done, particularly the western states in this area, we are really looking to you all to take the lead with respect to how you're going to deal with socio-economic impacts, mitigation, and monitoring. We haven't really seen the need to do any specific guidelines on it.

MR. LEOPOLD: Steve, it is my understanding that Synfuels Corporation is preparing what I term their second phase, and have to report to Congress sometime

in 1984, I believe it is the summer of '84. The figures that I've been quoted are in the range of \$25 billion for the second phase of potential development. Could you share with us what Synfuels is doing along those regards.

MR. GOTTLIEB: What's the \$25 billion number, are you thinking that is a proposed number for what may be requested?

MR. LEOPOLD: No, my understanding is that is the original allotment, the law stated somewhere around \$88 billion as I remember it, and this would be kind of the second phase of it, and that's really all I know on that.

MR. GOTTLIEB: Okay, it was a somewhat unusual way the statute was set up, was to authorize \$88 billion, \$66 billion of which would be available, up to \$66 billion, for the second phase; the amount was based on the submission of what we call the comprehensive strategies which is the document you were referring to. Congress could decide how much, if any, of that \$66 billion ought to be provided to the corporation, and at the present time there is no number or even range of numbers that are floating around the corporation as to what they might recommend to the Congress in the comprehensive strategy. It is still at a relatively early stage and right now serious consideration is being given to requesting a year, or up to a year's extension to submit the document as the statute provides. It should go sometime in '85 before we submit that document and make a request. I guess I might also mention that an Administration spokesman did mention on a very personal level it a hearing before Congress, but he didn't see the need to support any additional funding and when our Chairman was asked at these hearings about it, he simply reserved judgment.

MR. WATSON: I'll try a novel idea on you. Suppose the Synthetic Fuels Corporation, or SFC, was approached with the idea of absorbing the costs for storage of spent shale and other mined minerals. I say it because we are going to eventually witness a number of projects hopefully mining oil shale, the one thing that they will be doing in common is they will be producing overburden. Would it be an appropriate issue for your group to consider in terms of should each of these companies be storing overburden on potentially resource-producing areas or should there be mutually an area where all of them could store, or store most of it, a common area, and SFC could perhaps make grants or credits to companies to cover the costs of transportation and haulage to these sites or a single site?

MR. GOTTLIEB: I guess we would have to get into the specifics. We wouldn't have the authority, you know, to sponsor some central location or something of the nature you are talking about. In fact, I think the project would shudder at having to move all this stuff to a central location, moving spent shale and moving overburden. I guess my initial reaction is I don't see the authority and I'm not sure of the need, but if there is some novel approach that the sponsors are keen on or this Panel is, I guess it's worth studying. Of course in the first instance, we always look to the Mined Land Reclamation Board or the appropriate agency to regulate that kind of activity.

MR. ASH: Do we have any other comments or questions for Steve from the Panel? If not, we thank you very much, Steve, and invite you to stay with us for as

long as you can. I realize your schedule is such you may have to move along but we would be happy to have you stay.

MR. GOTTLIEB: On the contrary, I have planned to stay all day, I will be available for questions at any time privately, and I'm looking forward to today's session.

MR. ASH: Excellent. I'm sure some in the audience may have some questions for you. Paul

MR. FERRARO: I do have a question. At one time we talked about the monitoring plans that were not on the lease tract. Now are those going to be available for review at State and Federal levels?

MR. GOTTLIEB: The formal review process has been set up with DOE, EPA, and what we call the appropriate State agencies, the Colorado Department of Health in Colorado, the Utah Department of Energy in Utah. Those state agencies sometimes bring other State agencies into the process. Say, somebody from the Department of Interior was interested, we have all the stuff on file. At the Corporations' headquarters and EPA's regional office might in Denver, and so they can be reviewed and commented on. What we have tried to avoid is having, as I was indicating earlier, an unlimited number of agencies trying to negotiate with the sponsors and review these things. We thought it would become a little too burdensome, but as far as making comments to the SFC or unsolicited comments to the sponsor, those opportunities are available.

MR. FERRARO: Well then you're leaving it up to agencies like EPA or the State agency to coordinate within their own, for example, in the State of Colorado it would be up to that department to coordinate with others?

MR. GOTTLIEB: That's right. I think they can handle it very well. They usually bring several people in. At the Federal level there are at least half a dozen or more people at each agency that are reviewing each outline.

MR. LEOPOLD: There has been considerable talk about a consortium of oil shale companies principally for the purposes of research and development. To my knowledge no one consortium has approached Synfuels Corporation but I wondered what the initial reaction would be for such an undertaking. In other words, a consortium for research and development and then the companies would go out and basically do their own thing to put it into a commercial operation.

MR. GOTTLIEB: I'm really not sure, Bob, what's going on in that area. I don't know if you would call the MOBIL effort an R&D type when they were discussing with a number of companies doing one large project, but as far as I know, that effort has been temporarily disbanded.

MR. SVOBODA: Steve, in the Energy Security Act, it's my understanding that there's a requirement for the SFC to consider diversity of technology in the decisions that they make. We're seeing a proliferation of applicants proposing to use Unishale B. Can you comment at all on how important that

diversity requirement will be in the forthcoming decision on western oil shale projects?

MR. GOTTLIEB: I mentioned in my talk that of course we have two requirements, diversity and production, that are somewhat at tension with one another. On the one hand we're trying to maximize the amount of shale oil production and so in that context the diversity of technology is not relevant, and in fact you may want a similar technology that is somewhat tried and true, you could use that expression with respect to Unishale, it certainly will be tried in a month or two. So the diversity cuts somewhat in the other direction, and it's really impossible for me to state how the Board is going to weigh those two things, other than to say they clearly are committed to obtain some level of diversity and I think we're talking about several different types of technologies or a few, something more than two, but obviously less than half a dozen to the extent possible, and of course we still have an eastern shale project that is before the Corporation. That's kind of a nonanswer, but

I can't give you any precise answer. It's really up to the Board, and I think at the December 1 Board meeting they are going to have to make some decision on that or very soon after. Thank you.

MR. ASH: Well thank you very much. We are pleased to have you with us today and invite you to stay and sit here with us or in the audience, whichever you prefer. I think this Panel now has a 9-1/2-year record of wrestling with many of these environmental aspects of the prototype projects and we think that we've been a constructive factor in what's happened so far. Unfortunately we haven't seen any production yet from any of them, but that may not be too far off.

We will return to our regular agenda now with a report from one of our workgroups, the Water Quality Workgroup, looking at the MIS retort abandonment plan, and I'll turn it over to the Acting Workgroup Chairman, Larry Svoboda of EPA. Larry

MR. SVOBODA: Thank you, Hank. The workgroup did meet last night. In addition to the regular workgroup members present there were a number of other interested individuals and representatives from the Rio Blanco Oil Shale Corporation. I'll try to summarize the basic items that we agreed to in the time that we had last night, which was admittedly short, but if I do miss something or if I repeat them inaccurately I welcome any of the workgroup members present to chime in and set the record straight.

The first few items related to monitoring wells, and in addition to those that are being proposed by Rio Blanco in their abandonment plan. The group agreed, as well as the Company - all of these items seem to have full agreement of the Company also - we agreed there needed to be another well south, immediately south of the Retort 1 area. That would then provide a good complement of wells to detect the presence of leachate as it develops. (Clarke has suggested that we have the overhead on to show everyone where those wells are that we discussed. I think it's a good idea.)

MR. EARNEST: Everyone felt that there needed to be another monitoring well over in this location here, to have a confidence well for early detection of the presence of leachate out of the retort. Basically we proposed five potential locations for for wells. This area here is one of those potential locations and has now been shifted. We found a more likely area shown on the slide here. The well that Larry referred to will be one of the five potential positions previously located over in the area south of Retort 1. It is not a new well in addition to what we proposed yesterday but simply a relocation of one of the potential sites.

MR. SVOBODA: The second item that we agreed on was the need to, once the leachate had been detected in the "monitoring wells," and depending on where the leachate tends to be moving; given the data from these wells, an array of wells, an uncertain number of wells, would be developed in this general area here. The basic gradient as discussed lies somewhere in this direction, but there is also concern that the leachate may move laterally off this way. So depending on the data that we get from these wells, will have to determine where some

of these subsequent monitoring wells in this area will be. The number of wells, the location of wells, and what would trigger the well was left open-ended. We all agreed that after further discussion on that we could basically leave it up to the Oil Shale Office to determine the final deployment of these wells, but OSEAP and interested agencies could become involved in the process at that time.

The third point was the need to have a hard rock monitoring well immediately south of the East Retention Pond. The reasoning behind that is that if we do pick up the leachate there in concern that this pond which is unlined, or has a clay liner on it, the leachate could come up from this pond close to the retort. By having another well here that would give us a way of checking that and determine the real source of any leachate.

That was it on the monitoring portion. The next point related to the transfer of water to the East Pond, given the criticality of their Water Management Program, and we all felt that it was necessary for them to do that but agreed that the higher quality water which I understand is the Phase 3 ponds, would be moved over to the East Pond first. Try to get the cleanest water possible over to the East Pond, and that when they can move the water out of the East Ponds they'll do so and put it in one of the lined ponds that has the leachate catchment system. So that we felt was the only things that were required for that movement, the transfer that they're proposing to the East Pond.

With respect to the post-leaching phase, we felt that the water quality data should guide all the decisions that are made on any necessary actions after the retort is flooded, including the prospect of doing the leaching cycle over again at some point in the future or a number of other actions that Rio Blanco proposed in their abandonment plan.

The final issue related more to one of EPA's responsibility, and the Company agrees that a UIC permit will probably be required for the is abandonment plan

Proposal. That requirement, though, will not hold them up from proceeding at this point. It doesn't appear that it would, certainly. So what they're planning could proceed and when a permit is issued sometime next spring then we would sit down with the Company and negotiate. EPA would negotiate with the Company the requirements of that permit. Underground Injection Control is what UIC stands for.

Those are the items that we covered, Hank.

MR. ASH: Did you draft anything which we might use as Panel advice. It is our normal procedure to put these results into some kind of formal memo to the Oil Shale Office and we also would like to be sure that we have a consensus of the Panel that agrees with what the workgroup is saying. So I am wondering if it would be possible to draft something up today, during your lunch hour or coffee break that we could see if we have agreement from the whole Panel on that. Actually I jumped the gun a little bit, Larry, we should probably see if there are other questions or comments from other members of the Panel to you. I'll let you continue to handle that.

MR. LEOPOLD: Larry, did you talk about the timing? The Company yesterday basically said that there was a sense of urgency here. Did your group discuss that and make a recommendation on it?

MR. SVOBODA: Yes, we did discuss it, even the possibility of waiting a full year until they can get their ponds in a better situation for maybe doing what they're proposing-a year from now, and we rejected that as being infeasible. That they needed to proceed now. There is a sense of urgency with respect to their water management program, but we did discuss that.

MR. MADSEN: You mentioned yesterday you had a question about the sludge disposal. Did you get that resolved?

MR. SVOBODA: No we didn't. That's one thing that we didn't really have time to discuss fully. That's a pending issue.

MR. FERRARO: Larry, we have another issue that we discussed last night that I didn't hear you bring up this morning. Recirculation. What we agreed on related to that.

MR. SVOBODA: I thought I covered that in my Item 5, that water quality data would be used to determine what action was necessary, once the retort is flooded as they propose in their plan. Instead of just having seven pore volumes go through and then they proceed with the rest of their plan, that the water quality would be given a hard look once that's flooded again and the necessary action for the Company would then be evaluated at that time.

MR. FERRARO: I guess I'd just like to put it on the record that was a concern of EPA and the State and the numbers that were in the report as triggers, for example, the 12,000 on TDS, especially Paul Osborne raised that as an issue, and we did come to a resolution on that.

MR. SVOBODA: That's correct, and the array of wells that will be developed east the mining complex will not require a triggering of those levels that Rio Blanco has proposed in their plan at this point. It will be something more sensitive than that and will be determined at a later date, once we have water quality data from the more immediate wells.

MR. ELDERKIN: In regard to Paul's question on the sludge, that was addressed way back when these ponds were first constructed, and I don't recall exactly what the decision was, but I'm sure that in the approval letter that's been covered. I can dig that out and send it to the Panel if you like. Maybe Butch or Howard remembers what was in that.

DR. SLAWSON: To give a brief history of the sour water ponds - when the hazardous waste regulations first started coming out we had to determine our status as a hazardous waste generator, and that sort of thing, back in 1980, I believe. As a conservative measure because there were uncertainties about retort water and that sort of thing, I guess at that time just the Phase 1 and 2 ponds, were part of the hazardous waste management activities that Rio Blanco declared part of our hazardous waste management system. Subsequent analysis of the waters that were in those ponds, the scrubber blowdown and the retort water, indicated the materials were not hazardous and we provided that data to EPA and requested that

the ponds and those materials be deleted from our interim status under the Resource Conservation and Recovery Act, and that was granted by EPA. We have continued to track the quality of the water in these ponds, the water that's being put in there now is a lot better quality than what was being produced during the burns themselves, and therefore the material is still non-hazardous. I think how it was left as to the ultimate disposition of the ponds and the materials in them and that sort of thing, after everything is evaporated and dried up, or in the interim before that time we would continue to track the quality of the materials periodically, and we would sample the materials once the ponds are dry. Should that material turn out to be hazardous, it would have to be handled just as any hazardous material, and shipped off or we would have to become a disposal site and I doubt that that would be the case. More than likely we would pick it up and ship it off to a secured hazardous waste disposal site. If it's not hazardous, we are committed to completely reclaim the area as any other disturbed area on the site, and we would secure the materials, probably in place, or at adjacent disposal areas if we have a spent shale pile and that sort of thing, but basically deal with the materials, secure them on site and then reclaim the area. So that's basically how it's left open. It's a future decision item because whether or not the material will be hazardous is unknown at this time and it really hinges on that.

MR. BOEKER: I have a question with reference to the key indicator components that were used for response triggering as in the Phase 3 operation. It appears to me in my review that Pages 28 and 49 listed a different set of indicator components. Am I interpreting something incorrectly there?

DR. SLAWSON: Okay. Those are two different things. On page 28 the constituents that we listed there, the TDS, boron, molybdenum, and lithium, relate to the

water use criteria at the tract boundary for the uses we were trying to protect with the program here. The concentrations there or the back calculated values from using the ground water model, the concentrations and the constituents listed on page 49, the potassium, fluoride, specific conductance and sulfide were the tracers that we selected to look specifically for in those close near-retort monitoring wells to pin down that indeed we had established that interconnection between the retort and the aquifer that our monitor wells were doing. So these are more tracers than really water use criteria. For example, the potassium, the typical background levels in the aquifer are on the order of 2 to 4 ppm or something like that. What we are seeing in the leachate at this point is 1200 or 1300 ppm so it would be expected to be elevated in the leachate material and so it makes it a good tracer. So they are really there two different things.

MR. BOEKER: Thanks for the explanation on that. I have another question regarding your trigger response. I understand that there won't be a response action until the concentrations reach levels about double those that are measured in the upper aquifer at the 95-percent confidence level. I'm wondering how much momentum is going to be built up in the concentration and how much greater that concentration will be until the effect of your response action is noticed, and aren't we perhaps dealing with some dangerous levels if we double the upper aquifer concentration before the trigger is initiated?

DR. SLAWSON: Well I guess there are two points to be made in response to your question. The first is that the triggering takes place at the retort or very near the retort so the area affected at that time is very small. We made these projections of what various levels would mean at the tract boundary, so that we can, knowing what we want to protect in the water uses, we can respond to it very close to the retorts to pump it back down or initiate further leaching or whatever before you got a big portion of the aquifer contaminated. And so the program is designed to respond in those early stages before you've got a big problem.

The other thing that came out in our discussions last night is the need in the early parts of the abandonment program and in the early stages of the monitoring to use the data from, for example, the pumpdown after we've gone through the leaching process and in the initial interconnection with the aquifer where we start picking up things in the monitor wells. To use that data to calibrate or check the model that we've used to data and to reexamine this decision process. Because there was legitimate concern about the model and how good is the model? And those are very valid questions, so included in the program I think now there are statements under either Phase 1 or Phase 2 descriptions, I think in Phase 1, where we describe the pumpdown, that we would look at the water level data and pumping data to try to get a better handle on some of the hydraulic properties in close to the retort. There's also an indication, I think it's under Phase 3, where we would look at that data, water quality, in the retort, water quality in the monitor wells, to try to get a better handle on what dispersion is actually taking place. There wasn't, as I recall, any objection or concern raised in the group that met last night to the concept of what we were doing, that there were these uncertainties about the model, you know, the concept being that we're

going to protect these water uses and use these criteria some distance from the retort where we might interface with those uses. But the questions were related to the model and how we determine what those retort concentrations would be which would cause a problem with those uses. So built into the program is this reanalysis or reevaluation of the decision-making process to allow us to relook at that when we have some actual data from the abandonment.

MR. BOEKER: Well thank you for that clarification.

MR. SVOBODA: There were a couple of other smaller items too that we should mention. With respect to the trace organics monitoring program, we clarified that they are intending to do that semiannually. That seems to be appropriate and acceptable to the group. We also raised the question of quality assurance program for the monitoring effort and they have agreed to provide us with some additional information on their quality assurance program.

The two biggest issues that we discussed, in summary, were the monitoring wells and trying to get better data to validate or verify the model that they have used in their assumptions as to what kind of leachate, what the leachate might do at the tract boundary, and the concentrations that they might expect given concentrations near the retort. The second one, after the monitoring was the whole issue of leaching, the one that Paul raised and maybe we should spend a couple more minutes discussing that because there were a lot of concerns about that.

The Company in the plan, of course, is looking at the possibility of seven pore volumes. They decided that on the basis of some research that's been done that show us that a large percentage of the material is leached out with a change of seven pore volumes, but the research that was done that showed that involved the addition of new clean water for each new pore volume. They are proposing to use the same water to recirculate back in there and to leach out the material. So there is a concern that the water that they're reinjecting would become saturated and lose its ability to leach any more material from the retort, so their inference from the existing research is rather weak, and we want to watch that closely to assure that the leaching is effective in removing a large percentage of the soluble material within the retort.

MR. ASH: Larry, during the process is there any way to determine that? How would you determine that, whether it was in fact reaching that stage where it was ineffective and was fully saturated?

MR. SVOBODA: Well, the problem we have is just looking at a change of water quality. If you keep monitoring the quality of the water in the retort, and then you start to observe very little change in water quality. We don't want a conclusion on that basis to be reached that we're done leaching, that we've leached everything out. It is very probable that the water is just saturated and cannot leach any more out, so what we'd like for them to do is to really look at the quality of the water after it's been flooded, after the leaching process has occurred, to look at the kind of water that they have in there, based on the water that was in there before they started and comparing that to the other ground water in the area.

MR. EARNEST: A couple of comments relative to this issue. As I mentioned yesterday, the seven pore volumes was used as a base case and that I also brought up the point that the water quality, or the change in water quality would more likely be the criteria for determining the cessation of the leaching process. The seven pore volumes, as Larry brought out, was based on a set of conditions which are not the same as we are proposing, but for the sake of having a number that had some validity for scheduling purposes, it was used in the presentation. I agree that the water quality per se will be the controlling factor and not an arbitrary volumetric figure such as seven pore volumes.

MR. FERRARO: I have a comment or question, maybe a little of both. Why can't you actually determine from the samples from the lab tests the amount of material that was leached in those seven pore volumes, based on the concentrations and the volumes that you were leaching to get some notion of how much material in pounds per volume and then correlate that to your own retort and see whether or not after seven pore volumes the concentrations up to 8,000, 9,000, is anywhere equivalent to what's happening the labs? It would be rough but it might give you some indication.

MR. EARNEST: I agree, it would be rough. The biggest problem I would see with that is the inability to define that portion of the rubble that has not been affected by the leaching that has gone on in the past year both in the lower flooded area and in the upper portion that has been subjected to what is probably more channelized leaching, so you don't really have a base volume to

compare it to. We could take the lab data and come up with a hypothetical quantity for the entire retort but we would have really no clean way to correct that for the material remaining in the retort, given that we have been leaching portions of it for the past year.

MR. FERRARO: Well then if you calculate, I would imagine that would be a higher number, if you didn't take into account what's been happening.

MR. EARNEST: Very definitely. If you just took the calculated theoretical amount of soluble material within the rubble based on this previous lab testing and used that as a basis for what we're going to try to accomplish in the proposed abandonment program, there would be very little chance that we would achieve that type of quantity.

MR. DONNELL: May I make a comment. As of right now, I don't think that Rio Blanco or anyone else has any idea of what on earth has happened to that rubble under the temperatures that have been applied to the raw shale. Theoretically with high temperatures there shouldn't be any leachable material at all, but as we know, the temperatures vary in the retort from place to place, and if the extremely high temperatures haven't reached all the material, of course it is going to be leachable. It's going to be oxides, and unless you do have an idea of how much of that has been converted just to oxides or have gone even further into silicates and therefore nonleachable, you're not going to be able to come up with any sort of a hypothetical case. So I think I'm concurring with your outlook.

MR. EARNEST: There has been work done as John was referring to, that indicates that at high temperatures you do undergo some phase changes within the various minerals that occur naturally in the oil shale formation, and if you took this to the extreme, there would be virtually no soluble materials left in the retort following the retorting activity. We know that in-situ retorts are not 100-percent efficient. There are areas that are retorted or subjected to temperatures of varying degrees, and it's not a uniform mass in any direction, so any predictive quantities would be gross at least.

MR. FERRARO: Well it's a screening mechanism. It's giving you an upper limit, that's all I'm saying. It's like your model, as we were talking last night, your groundwater model has a lot of problems with it too, but yet you are willing to use it as a guide. You also have used the data from the lab experience as some guidance in making some determinations here, and that's all I'm throwing that out as it's a number out there that would give you an upper limit.

MR. EARNEST: That can certainly be done. Relative to the model, we recognize the shortcomings of any modeling technique, especially in the area of a hydrologic modeling. We need to keep in mind that our front-line monitoring is within feet of the retort itself and the distance from these wells to the property boundary is in the thousands of feet and the velocities at which fluids are moving through the aquifer system are not all that great, so there is a time lag here that gives us an opportunity to respond that while to a purist it perhaps is not adequate but practically, we're not in a situation if we detect a problem in monitoring wells it is immediate Doomsday at the boundary or Yellow Creek or someplace else.

MR. HANSEN: Does the temperature of the retort affect the solubility of the leachate and if so, would there be any point in keeping the retort dry until it cools, or is that not feasible?

MR. EARNEST: Well the retort is not dry in the strictest sense of the word right now. The bottom third is inundated. The timing on natural cool-down is measured in years, and as was brought out in our sessions yesterday, especially last night, the critical issue before us today is the water management side of the issue, with the abandonment of the retort providing two things, one being an end to the generation of these waters which now must be disposed of by evaporation, and secondly from the Company's standpoint getting out from under the daily care and feeding of this thing. I really don't think natural cooling is going to have any long-term effect on what will ultimately be leached from the retort, either naturally or through our forced program.

MR. OSBORNE: I'd like to clarify something that I believe was brought up last night as far as the monitoring wells, is that there is some concern that since there is high permeability trend to the north even though the main flow component is to the east that it was agreed that the Company would try to reactivate one of their existing wells to the north to act as a further data-collection once the leaching phase is over to insure that there's not movement initially when the retort is being reflooded out to the north.

MR. EARNEST: That's correct. We have one well in that area that we are attempting to reopen now for other reasons and any well that exists in and around the area will be fair game for any on-going activities either of a dewatering or a monitoring nature.

MR. JOHN: I have a very simple-minded question and perhaps you covered it yesterday, in which case I apologize. I understand that your analysis is based on a worst case and there may not be very much leachate. If there were, and if it were to get past the monitoring wells and start to get toward the tract boundaries, is there some provision to deal with that situation, try to mitigate the impact?

MR. EARNEST: Yes, part of our response to anything over and above the limits which will be agreed upon will include but not necessarily include all of these. One option which is probably most likely would be would redo the leaching activities, pump the thing back down, and go through the exercise again, and in doing this you do at least stop the migration,, you may even reverse the flow to some degree. The last option that's open to us and it's viewed by some as being the ultimate solution, but it has its time restraints and limitations too. This is ultimately grouting either the retort itself or installing a grout curtain around it to effectively isolate it and reduce the permeability to some very low figure. There's no such thing as a perfect grouting job, especially in an environment such as our retort so that anything we would do would be a delaying tactic and it would not be an absolute final walk away and never think of it again solution.

MR. SVOBODA: One final comment I have. Some Panel members brought up the fact that the Department of Energy wasn't represented in the meeting last night. They do have a number of comments that they're expecting from the Department of Energy so I'm sure that they will want to comment also on it.

MR. ASH: My question in that regard is whether there a mechanism for DOE's comments to go direct to either the lessee or to the Oil Shale Office separate from the Panel? I'm sorry they're not here but I hope their comments do get in there, but is there such a mechanism?

MR. ELDERKIN: Maybe I can answer that. Copies of this plan had been sent to Art Hartstein and down to Los Alamos, and their comments will be forthcoming. I assume direct to us, or they may go through the Panel.

MR. ASH: Well Dr. Hartstein was unable to come to this meeting, he wanted to but he had other commitments. Mark

MR. BUBRISKI: I have a question, actually your inquiry of 15 minutes ago about coming up with a Panel position on the workgroup's recommendation and I'll plead ignorance is bliss, that's not in my area of expertise, but one thing that does concern me, on looking at this agenda, we've got 9:15 set as the workgroup presentation and then basically going on to an option of Panel advice with the opportunity for public comments to come after that. I would think it would be more prudent

to reverse that, and solicit public comments if there are any before this Panel comes up with any sort of formal advice or position on this particular situation.

MR. ASH: The public comment period is not specifically related to this item. This is a general comment period when members of the public can comment on anything. We would like to have something that the Panel can agree to so that the Oil Shale Office doesn't have to dig out what we meant from the minutes, or somebody else trying to devise or derive a memo. So I would like to have the workgroup offer us something we can consider at a later date. We could actually have that recommended report come back perhaps after lunch, some kind of a draft advice memo which would then kind of meet what you're suggesting. Butch

DR. SLAWSON: I had a couple of things - we basically have a request. I spent a fair amount of time yesterday in my presentation covering the water quality constituents that we're proposing to monitor, that basic list of parameters that we would use at a fairly high frequency to keep track of what was going on, the trace constituents and the priority pollutants. We touched briefly on the priority pollutants last night. There seemed to be some consensus that that was an appropriate measure of the trace organics and suitable for keeping track of the trace organics. I'd like a recommendation or some kind of statement from the Panel relative to the list that we've proposed as being the appropriate things to monitor to keep track of this activity, and in a related manner I went through our thinking and our philosophy relative to the protection of water uses, what the water uses were in the area and the criteria that we have selected to act as measures for the protection of those water uses, the irrigation and the cattle grazing down in the watershed where we are. So I would like a recommendation not only about the parameters that we're monitoring, the longer list, but also that those criteria, those water uses, and the indicated program to protect those water uses at our tract boundary and use that concept as the basis of the monitoring program, that that's the appropriate way to go. So we would like a statement, recommendation, or whatever, relative to those things because that's the basis of the monitoring program.

MR. ASH: Let's bear in mind, of course, that we are only advisory and we give our advice to the Oil Shale Office basically in these matters for their consideration, but I think your point is well taken and that would be appropriate and I would again ask the workgroup if it is possible do you think you could come back perhaps after lunch and give us a draft of proposed memorandum of advice from the Panel.

MR. SVOBODA: We didn't have time to discuss that issue. I don't know how other members of the workgroup feel about it. I'm not sure we're going to have time to really carefully deliberate such an issue. It is rather complex for one thing, and I'm just not sure it's possible given the time constraints that we're dealing under today.

MR. ASH: I would be interested in some kind of a rough outline of what you think we might want to say. Another possibility, seeing that the Oil Shale Office has asked us for our comments no later than about the 15th, is that if we could circulate something for review and not actually make it final at this meeting,

if you, the workgroup, and others interested ones feel you need some more time, but I wouldn't want to make it official and formal without either consideration by the Panel here in a meeting or the opportunity to circulate it for the rest of the Panel before we made it final.

MR. SVOBODA: I can draft something up for the Panel's consideration on the issues that we've already discussed. Bringing up new issues at this point today, we just don't have any time allotted for a workgroup meeting. That seems to me to be something that would generate some interest among the members of the workgroup. Any reactions from the workgroup members?

DR. SLAWSON: I think what we're asking for is a reading on the underlying philosophy for the monitoring program that, looking at those use criteria, using the model as it would be further evaluated down the road to evaluate what concentrations at the retort or very near the retort mean, and using that as a trigger for some sort of response mechanism, pumping it back down, going through the recirculation business again, also ultimately to using that sort of mechanism as the decision process of when we've completed abandonment and when we're done. So it is a pretty crucial issue to us because it is the underlying basis for the whole program.

MR. ASH: Any other comments, questions, suggestions? Do you think then we could see a draft perhaps after lunch. Well I guess what I'm looking at, do we need to spend any more time on this matter this morning? Or could we come back with a draft perhaps, I'm suggesting after lunch rather than to try to do it obviously this morning?

MR. OSBORNE: I would just like to say that we sort of discussed this last night a little bit. One of EPA's concerns from the standpoint of the underground injection control program is the protection of offsite water as a future source of drinking water and that would basically, I think, indicate to us that we would like to see lower values of the trigger at the retort so that there was less impact, and that was one of the reasons that we were concerned about re-looking at the model to reverify it and to try to reevaluate it to minimize the impact if possible on both onsite and offsite waters. But as far as - I don't think we're prepared right at this moment to say whether or not we would totally agree with the numbers that the Company has come up with at the site boundary.

MR. FERRARO: Well it would seem to me that we could at least, or at least I would say that Larry can write up the comments that we discussed last night and then leave it open ended for any additional comments or even the same comments to be sent from EPA to the Oil Shale Office directly, in addition to this, at least the four or five or six items that we talked about today to be documented in a rough draft sometime today. I don't see where that's a big deal.

MR. WATSON: Yes, I think we're pretty much in agreement on that, and last night we decided that we would probably never arrive at a number which would be agreeable to everyone, but Larry is a very fine writer and he can spend his lunch hour doing that.

MR. ASH: Okay then. We thank you, Larry, and we thank the members of the work-group and also Rio Blanco for providing answers and discussion on all these issues. We'll plan on seeing a draft memorandum of advice then after lunch on this particular matter.

That shifts our agenda around a little bit. We've got coffee coming in at 10:15 - that coffee I understand will be ready in five minutes now so we're essentially prepared to take that break, and I think that after the break we will, exercising the Chairman's prerogative I'm going to adjust the agenda a little bit and move something from the afternoon up to the next item after the coffee break and we will work that during the break, what comes next. Are there any other comments or questions, things that need to be discussed just in general before we break? Okay, why don't we take our break a little bit early.

Meeting recessed at 10:10 a.m.
Reconvened at 10:30 a.m.

MR. ASH: We will resume the meeting if we may. During the break I was speaking to Dick Lieber of Rio Blanco and he mentioned that they have a toxicologist here who is prepared to answer any questions that we might have on that aspect of the retort abandonment plan. I am not sure whether there are any specific questions. Dick, you might let us know what has the work been in that area, where do you all stand on that kind of work?

MR. LIEBER: I'm looking for my help right now, Hank, I guess he is checking out of the hotel.

MR. ASH: We can come back to it a little later. My plan to maintain flexibility of the agenda leads me to move to this time now from the afternoon the status report on the BLM's proposed additional lease offering and permanent oil shale program development. I will ask Bob Leopold to give us that now, and he'll be available to answer any questions as well. Bob

MR. LEOPOLD: Okay, thank you, Hank. If I may review with you for a moment what we call the program elements of the oil shale program, I think that might be a good way to start out. First of all is the prototype program, and I'll give a brief status report on that. Secondly being what we call the private side of our

responsibilities. Thirdly, that of our land use planning, our resource management planning efforts that are going on to date. Fourth being what we call the permanent oil shale regulations and the resulting national programmatic environmental impact statement on those, and fifth, is the legislation that is being worked on by a group of people here in Colorado and Utah and elsewhere in the country. To put things in perspective I'd like to start with No. 5 and work back to No. 1 if I may. For the past year there has been a group made up of industry, state and local governments, and environmental groups. The co-chairman, DeWitt John at the end of the table here, has chaired that for the past year. I think it's important for the group to know the makeup of that and I'm not going to go into a lot of detail because I can't, of what has happened with that group.

Representing industry has been the American Petroleum Institute, the American Mining Congress, and Rocky Mountain Oil and Gas Association. The state and local governments have been represented by the States of Wyoming, Colorado, and Utah. They are incidentally the same people who represent and are represented on the Regional Oil Shale Team. The environmental groups are made up of the Sierra Club, Friends of the Earth, Two Rivers Association - many of you are familiar with that organization here in Grand Junction.

I think one of the very positive things that has come out of this is that for the first time, specifically in oil shale, you've got this wide divergency of opinions and groups and basic philosophies, have sat down for almost a year now and sat down and I think addressed the significant issues related to oil shale. What this group hopes to come up with is what I would call a framework for comprehensive oil shale legislation. Obviously this legislation, if enacted, is going to have a major role to play with the Bureau and the Department on how we are going to manage the oil shale program. I think the significance of that is related to the other four programs that we have. The group itself is, in my judgment, very close to having a concurrent feeling that, in fact, they have developed a framework for comprehensive legislation. There are still one or two major items that have not been totally solidified by the group. I think my judgment would be that shortly that will happen. I know that is anticipated by the group to be one of their goals.

With that in mind and the Bureau's position that we have to recognize that this group is working on that, I'd like to just briefly say where we are with the regulations and the programmatic EIS. All of you have to recognize that we are still in what we call an ex-parte communication on the regulations, but there are some things that I can share with you on that. First of all, we have recognized that the legislation is being worked on, and with that in mind, our timetable will be dependent upon that legislation. If it looks in a positive way that that legislation is going forward, our Assistant Secretary has said that we will recognize that advancement. At the same time we plan to finalize our regulations and the resulting programmatic Environmental Impact Statement.

I think one thing that I can share with you is that in all probabilities the oil shale regulations that I'm sure most of you have reviewed in draft will again be repropoed. That is the current thinking on that. So that, in fact, will give everybody, particularly in this room, an opportunity to take a look at the regulations again. In my judgment again, the Bureau and the Department have been extremely responsive to the many concerns that were viewed by industry, environmental groups and state and local governments. The time period for that release has not been established yet, but we look around the first of the year for a decision to be made by the Department and the Bureau as well.

Curt Smith gave you a brief rundown on the resource management plan in Colorado. I might also say that in Utah a plan is going concurrently on the Bookcliff Resource Management Plan of which Oil Shale is a part of the multi-lease management that will occur there.

One other thing that I would like to note specifically in Colorado is that we are using what I call a very comprehensive computerated system that I think

ultimately industry as well as state and local governments and environmental groups as well offers probably the most comprehensive data base of anywhere in the country that I know of, specifically related to not only oil shale but everything else, should and will be made available to those people who are interested in that kind of information. It is certainly going to help our decision-making process for sure.

Moving on to that of the private, most of you are familiar that the Chevron EIS for private oil shale is in its final production. To my knowledge, that hit the street a couple of weeks ago. I personally have not reviewed the final copy of it, but that is available. The Mobile Pacific Project, they are anticipating that will be done between the middle of December and the first of January, so if you have specific comments on that they should be forwarded to the District Manager, Wright Sheldon in our Grand Junction District Office.

Relating back to our No. 1, that of the prototype, current status of that is that the decision document which we call the Secretarial Issue Document, is on the Secretary's desk between the Assistant Secretary Gary Carruthers and that of Mr. Watt. I think you all know that designate Clarke has been designated, he has not been approved by Congress as of yet. My judgment would be that it is going to be a time before Clarke decides on what he wants to do with the particular prototype program. I doubt seriously that Secretary Watt will make that decision before he leaves office. So I frankly don't look for anything before the first of the year on the prototype program. Just to quickly review what the opportunities are, we have two tracts which are called C-11 and C-18, one of which is encumbered by a sodium lease, that being C-18, and the decision will be whether to lease or not to lease, particularly for the multi-mineral development that may occur and could occur on either tract.

That in a very brief summary, Hank, is where we are with the Bureau's programs at present, and I'd be happy to answer any questions anybody has.

MR. GOTTLIEB: What data do you have on this comprehensive computer data base that you were referring to?

MR. LEOPOLD: We have approximately what we call 118 themes, ranging all the way from soils to vegetation, slope aspects, oil and gas, cultural resources, we have our known oil and gas areas, the same thing for our oil shale. I'd be happy to provide that list to you, Steve, so that you, in fact, can see it. It is extremely comprehensive. Soils type go down to the second level, everything you really want to know about the Piceance Basin we consider to be in that are. That has also been tied into the cumulative impact task force, social and economic analysis, that capability exists between the two.

I think one of the other important things in there, a lot of the State programs, the State of Colorado specifically, are interchangeable with our particular

hardware and software combinations so that we can glean information and directly transfer it back and forth and use it. One of the very strong points of this is that specifically in the wildlife area we've agreed on the basic data between

the agencies, between the Department of Wildlife and that of the Bureau and the Forest Service and other organizations who are interested in wildlife. Our analysis and our different management philosophies may come to bear, but the data we have all agreed on. I think that is very important. I think it is really going to help everybody.

MR. ASH: Bob, relative to timing and if you said it I must have missed it. In terms of the permanent program what would be the timetable for that and when it might be functional, if you will?

MR. LEOPOLD: I think the position of the Bureau right now, Bob Lawton may want to help me on this, but is that prior to Fall that we, in fact, will have the regulations in place, no matter what the legislation does. In other words, we feel the need to move forward in terms of putting the permanent program into effect and we plan to do that.

MR. ASH: That final EIS hasn't been issued yet has it?

MR. LEOPOLD: The final EIS and the permanent regulations will be issued concurrently pending the rise or fall as that may be of that legislation. So they will come out together.

MR. ASH: Okay, so we're looking at Fall then probably for both?

MR. LEOPOLD: The earliest that they may come out is after the first of the year. My judgment would be that the latest would be some time in late spring.

MR. ASH: Okay then, but the program might then be operational by Fall, I was just trying to get a sense of that.

MR. LEOPOLD: The program will be operational by the fall of 1984, correct. That would be the latest.

MR. ASH: Then I want to relate that back to the additional prototype leasing. Do you see that going forward when the permanent program is ready to be launched, or operational as soon thereafter?

MR. LEOPOLD: Bob Lawton, would you like to answer that?

MR. ASH: Bob, we knew we would get you up here eventually.

MR. LAWTON: I think I can clarify a few things. First, the prototype program. The document has been laid before the Secretary. Secretary Watt has deferred the decision to Judge Clarke when confirmed, so he will not make that decision before he leaves office. Secretary Watt will remain as Secretary until the new Secretary has been confirmed. His hearings will be held on the first, second, and if need be, the third of November. It is the general feeling that he will be confirmed before Congress adjourns on the 18th for this year. We will then go before him - by the way, he has been briefed on the oil shale program as part of his confirmation hearing. After he is confirmed we will go before him with the

prototype program and explain to him fully what the program is all about, the decisions to be made. Our guess is that it will be around the first of the year before he would make the final cut on that.

As to the permanent program, the decision has been made that we will reissue as "proposed," the regulations. The EIS I believe is at the printers now and it will go final. The target date for both of these will be the 30th of December. This will give an opportunity for the legislative group to finish their work. The proposed regulations will be out for a 60-day review period. Now early on, the permanent program was scheduled to be in place by the summer or early fall of 1984. The decision has been made now to go through activity planning. That will start with fiscal year 1985. It is anticipated that the activity planning phase will take one year to 18 months to complete. Right now we're looking at the permanent program to be in place to offer the first lease if it is decided to offer a lease or leases by the summer of 1986.

I think that basically is where we are at the present time. Now this is the program as developed under the policies of Secretary Watt. You have to recognize that we will be getting a new Secretary. He has the prerogative naturally of changing all or any part of it that he wishes. My guess is the program appears to be an excellent program, well thought out, and we feel that he will probably go ahead along the lines that it has been developed.

MR. ASH: Thank you, Bob. Any additional questions or comments?

Going back to what I brought up right after the coffee break, whether there was any interest or comments for Rio Blanco's toxicologist, Dick Lieber, did your help come back? Dick had mentioned that you had a toxicologist here and was wondering if there were specific questions for him, but none appeared to arrive immediately from the Panel so then I asked the general question what have you done in that area that might be of interest to the Panel.

DR. SLAWSON: Well, as I outlined yesterday, we've done several things, particularly to look at the trace organics in the retort leachate. The work that was done by the Geological Survey early this year was a scan of the trace organics looking for all the things that might be there. The results of that are in the plan, it's about a 4-page table with all of these compounds that were identified. We had that data examined by our corporate toxicologist to see if there were things that would be of great concern. We view this as a conservative analysis because this was leachate directly from the retort without having gone through the preleaching process that we're talking about or any dilution that we may get from the aquifer as the material flows away from the retort. Those data were examined looking at the specific compounds, where there was data; for many of the compounds there is not toxicological data and had them look, where there wasn't specific data, look at the classes of compounds, or the groups of compounds and what those types of compounds mean as far as environmental effects. The bottom line from that analysis was that there didn't seem to be anything, at the concentrations observed, that would be of particular concern, as far as environmental effects or effects on potential uses of that water.

We also have analyzed twice, well there are two analyses reported in the plan. We have done a third analysis of the organic priority pollutants. We selected those to analyze more specifically and to include in the monitoring plan because EPA in defining those priority pollutants also defines criteria, periodically update those criteria with new data about what we know about these compounds. So there is toxicological data on those compounds and EPA has set criteria for what it means if you have got those in a drinking water source, for example. What came out of that analysis was that benzene was the only compound

identified that exceeded EPA's criteria, those criteria being for a drinking water source. Actually the compounds that we see in the priority pollutants, benzene, toluene, ethyl-benzene, are residue from the oil left in the retort. Those are part of that light fraction of the oil.

That pretty well summarizes the evaluations in looking at those parameters that are listed in the plan. We also looked at the toxicology data or standards and criteria, if you will, for the other trace constituents and major ions. Many of the major ions also aren't specifically toxic but you get into the problem of concerns about salinity for the major ions. Does that cover it?

MR. ASH: I would think so. Are there questions or comments? I just wanted to take advantage of the opportunity if there were concerns and to know just what you all had done.

DR. SLAWSON: In the plan for these various classes or groups of compounds, I think it's in Section 5.5, there is a paragraph or two on each of the classes of compounds and what those compounds are like.

MR. ASH: Okay. Thank you, Butch. We are approaching 11 a.m. which is the time which we have scheduled for the opportunity for public comments. I've had no one contact me to say they wanted to speak to the Panel. We had anticipated some visitors that might have something to say but I am not aware of them coming, so I would ask at this time if there is anyone in the audience who would like to make comments or offer any statement to the Panel on our operations or on the oil shale program in general. Hearing none, I will stay with this for just a little while at least and if anyone shows up who was looking at the agenda for 11, why we will certainly allow them to comment.

I do have one item that came in the mail earlier this week to make a part of the record of this Panel meeting. It is a letter from Marathon Oil Company expressing their concern about the use of the 84 Mesa area for disposal of waste materials because of their opinion that it would hamper ultimate development of the oil shale resource under 84 Mesa. This is not really a new issue. It's come up before, but this letter that has come to the Panel is a formal expression of concern. It will be made a part of the Panel record, and we were able to make copies and provide copies to all the Panel members so I am not proposing to read the letter into the record. We will make it part of the record and I think there were some extra copies. Anyone in the audience that is interested in having a copy we will certainly make it available to them, but that's my intent at this time on that matter.

Copy of letter from Marathon Oil Company to be made part of the record of the minutes of the thirty-eighth meeting of the Oil Shale Environmental Advisory Panel following page 75:

MARATHON OIL COMPANY
P. O. Box 269
Littleton, Colorado 80160

October 21, 1983

Henry O. Ash
United States Department of the Interior
Office of the Secretary
Oil Shale Environmental Advisory Panel
Building 67 Room 1010
Denver Federal Center
Denver, Colorado 80225

Dear Hank:

Marathon would like to express its deep concern about the Rio Blanco Oil Shale Company (RBOSC) proposal to lease from the BLM the 84-Mesa area, or for that matter other tracts overlaying the rich oil shale measures, for the Purpose of rubble disposal (i.e. retorted shale, overburden, and related mined materials). The 84-Mesa tract in particular concerns me since this would eventually place an additional 1000 foot burden on some of the richest oil shale sections of the Piceance Basin. Further, it would foreseeably tie up this valuable mineral resource from probable mineral lease and development for at least 50 and perhaps as long as 100 years. I therefore request that the Oil Shale Advisory Committee take serious consideration of what is actually involved.

It is my considered opinion that leasing the 84-Mesa tract for rubble disposal' will greatly hamper, if not totally preclude, the orderly development of the oil shale under this tract with production of perhaps as much as 11,500,000,000 (11.5 billion) barrels of crude shale oil. [This number is based on an average of 1000 foot of recoverable oil shale section assaying about 25 gallons per ton (1800 barrels per acre foot) under 6400 acres of land.]¹ Loss of even one half of this amount of a valuable hydrocarbon resource is untenable to me and I do not think our nation can tolerate shortsightedness in this matter.

It has been argued by the proponents of the 84-Mesa tract that the resource is too deep to be recovered by open pit methods. With this I cannot agree or disagree. I understand they have arbitrarily stated that 1000 foot of overburden would be a cut-off point in this area. I find this criteria hard to accept particularly when one looks at the log for the USBM/AEC core hole No. 2 which is in the northeast corner of the proposed tract and finds that starting at 1100 feet there is almost twice as thick a section of rich oil shale as will be found in the C-A tract. However, if 1000-feet of rubble are dumped on this particular area, I will agree it will be unrecoverable by open pit, by in situ, and only marginally by room and pillar methods.

Henry O. Ash
October 21, 1983
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With regard to suggested recovery by room and pillar mining, I don't know what additional lithostatic pressure will be imposed on the oil shale measures, but assume that it will about double with the overburden going from 1100 to 2100 feet (assuming 1000 foot of rubble is piled on top). I also assume that the rubble will also be pretty much dead weight since it will be largely unconsolidated in nature. Therefore, the suggestion that mining the resource by the room and pillar method will be practical does not make sense. There will have to be corresponding reduction in oil shale mined as the rooms would be smaller and the pillars much larger to accommodate the increased load.

If in-situ processes are being proposed I believe they can also be written off. Development of the tract after rubble disposal would be a technical nightmare. For example, the AEC has had a great deal of experience in trying to drill holes into unconsolidated rubble zones formed by nuclear explosions. It is my understanding that the drilling has been most expensive and difficult. Further, it is equally hard to visualize anyone economically sinking shafts through 500 to 1000 feet of rubble to develop an oil shale resource.

By way of recommendation, we feel that off-tract leasing of land for disposal of rubble should be essentially off the oil shale bearing lands. In this case, to the west of the Cathedral Bluff. Further, that additional haulage costs and purported higher environmental costs should not be the deciding factor. In fact, a Cathedral Bluffs disposal area should not be environmentally more onerous than that being required by Union or Chevron in a much more environmentally sensitive area.

Finally, we have no objection to the plant and related facilities being constructed over shale bearing land in an off-tract location, since such facilities can be dismantled and removed. Understandably, such action may require an amendment to Section 318 of PL97-394, in order to have two separate tract locations leased with an area not exceeding a total of 6400 acres. To us this does not seem to be an unreasonable or insurmountable alternative to the present proposal.

Sincerely yours,

(sgd) Dean

V. Dean Allred

VDA/lf

cc: J. H. Brannigan, Vice President, Research

As Frontier Airlines has juggled their schedule and the flight that we expected to go at 5:40 is now going at 4:36 I'll take advantage of the opportunity to perhaps do at least one other thing that we had scheduled for this afternoon.

You all were provided a copy of our current workgroup organization, and I'd planned this afternoon to look at that and see if there are any thoughts on the way it is structured, on membership, and for example, I see that we need probably to assign another person or two to Cathedral Bluffs workgroup with the anticipation of a revised DDP coming to us for review within the next few months. These original assignments were made largely by people volunteering and some suggestions from myself, but in some cases we've had a member replaced by someone else, so I just automatically put him in the same workgroup. So if anybody wants to move or wants to volunteer for another workgroup or has comments on

this structure, why don't we do it now? I know, no one's looked at their mail yet! Hal Boeker

MR. BOEKER: Mr. Chairman, is the appointment of an agency member a formal process that has to be concurred in by the Department?

MR. ASH: I would say technically, yes. It's been handled rather informally. I think that all the original agency members were formally appointed, I think by the Secretary. I think there may have been some substitutions since then that were never actually formalized though.

MR. BOEKER: Have the appointments of alternates been concurred in at the Department level?

MR. ASH: I don't think that concurrence has ever been sought. The alternate has normally been named or designated by the agency and served as appropriate, or as needed.

MR. BOEKER: Could an alternate then move to become the regular representative without concurrence?

MR. ASH: Probably. I'd like to have something formal that says so-and-so is the new member. I really would. I don't think it is necessary to go to the Secretary, though. If the agency wants a person to represent them - I've never known the Secretary to quarrel with anybody's nomination of a member.

Well, hearing no comments I'll do whatever rearranging of the workgroups that I can talk people into because I think we probably need to shift some of the talent around. We've tried to make a reasonable distribution. Looking at the list it looks like the Socioeconomic Workgroup is the most popular one. Everybody seemed to want to be on that when we set it up.

It being 11 o'clock when I had scheduled public comments I'll ask again if there is anyone here that wants to offer any comments or statements.

Well, unless the Panel has some objections I think we will try to take an early lunch break, and perhaps try to reconvene early, again with an eye towards helping people make that 4:30 plane.

MR. JOHN: Why don't we start in on our after lunch business?

MR. ASH: I have a feeling that the off-tract matter might take longer. I have no objection if you all are ready, Workgroup Chairman, would you like to start on that this morning? I'd still like to break at 11:30 so we miss the rush for lunch.

MR. UTTER: Well the workgroup is ready, willing, and able here.

As you know, the Rio Blanco Workgroup consists of besides myself John Donnell and Paul Kilburn, Clarke Watson, and Dewitt John, and the majority of us were able to get together yesterday evening and discuss

the off-tract disposal proposal, and we've come up with a brief statement and recommendation here which I'll read to you and then after that I'd like to ask any member of our workgroup if they have any other comments to make. That would then be the time for that, and then of course anybody from the Panel.

"The Rio Blanco Workgroup agrees that an off-tract lease should be let for disposal of overburden and/or spent shale. However, on the basis of the information available we are not certain that the proposed 84 Mesa site is best from an environmental viewpoint. Therefore we recommend that a decision on an off-tract site be deferred until more information is available. Factors that should be thoroughly investigated include but are not limited to:

(1) Future recovery of the mineral resource underlying the proposed disposal tract or tracts.

(2) The applicability of the DARE evaluation which now is about 8 years old to today's tract selection criteria. At this time we should have a lot of additional information on environmental factors and the weight that should be applied to these factors so it could be that the DARE evaluation is now out of date.

(3) A long-term consideration of the disposal of all of the some 10-1/2 billion cubic yards of overburden and spent shale. According to the proposal about 5.2 billion cubic yards can be handled by the proposed offtract.

(4) What are the plans to prevent groundwater pollution from spent shale that is proposed to be backfilled into the pit?"

And that's the list of factors.

Now do any other members of the workgroup have any comments they wish to make?

MR. CARIE: Could you repeat the last factor please?

MR. UTTER: Item 4. What are the plans to prevent groundwater pollution from spent shale that is backfilled into the open-pit mine?

Do any of the Panel members have any other comments to make at this time?

MR. DONNELL: Steve, I would just like to elaborate on the item with respect to what this is going to do to the in-place resource under 84 Mesa. This has always been a concern of mine and I think that we have to take into consideration the optimum recovery of the resource in the entire Piceance Creek Basin. This is an area - the 84 Mesa area is an area where the oil shale resources are extremely thick and rich and in addition you do have the associated minerals which are to be considered in the expansion of the prototype leasing, underlying 84 Mesa, several hundred feet of section contains maybe 20 percent nahcolite in the section. In addition to that you might get an

average of two to three percent extractable alumina, which is a consideration in the Dawsonite. And what the covering of this would be in addition to the estimate, I see that Marathon has estimated 11-1/2 billion barrels of oil under the 84 Mesa. Well I separately came up with something like 12 billion barrels in a very, very rough estimate. Based admittedly on very sparse information, primarily the Bureau of Mines' core hole No. 2, which really didn't even go through the entire section because it had a down-hole fire before they reached the bottom of the oil shale section and had to abandon the hole. So it is a concern that possibly this would prevent the maximum utilization of that resource if the overburden and spent shale were deposited on top of 84 Mesa. That's all I have to say.

MR. UTTER: Thank you, John. Hal, you had a comment you wanted to make?

MR. BOEKER: Steve, I'd like to make a couple of observations with relation to the 84 Mesa off-site disposal. In reviewing the '73 EIS I noticed there were a number of comments that were in general opposition to the use of the canyon disposal process so I would assume that there may be less opposition to the Mesa top disposal. I personally believe that if the prototype oil shale program is to be given a fair test that some off-site disposal land is going to be necessary. There's no doubt in my mind that wildlife proponents in general will hate to give up another 6400 acres of native range, no matter where it is located in the Piceance Basin. So I don't think the specific site location is all that important. There are a number of fairly unique factors about the 84 Mesa with relation to its wildlife values. About half of the range or a half of the area is considered winter range for sage grouse, particularly that portion lying to the northern or lower section of the tract and adjacent to 84 Mesa, and within this designated area there is one sage grouse strutting area that I'm sure some people will suggest as being a critical problem. The entire tract has some deer winter range value; in fact, quite considerable value. A

small portion of the tract is considered a critical winter range in that it is usable during very severe winters, that is considered important that as much of this area as possible be retained for the deer winter use.

The concern that was expressed some time back about whooping cranes stopping by I think is of insignificant value, at least I view that stopover as a rather random, opportunistic visit to the area. I don't think it is critical range for whooping cranes from the information that's been available. Perhaps more of a greater concern is the scope of operations that will be made available to the development of Tract C-a through the availability of a 6400-acre offsite disposal area. This might result in a much greater water use factor. It may result in importation of greater amounts of water than were considered originally and if that is true, then there perhaps would have to be consideration of a renewed Section 7 consultation of the impact of this greater water use for endangered species. I'm only conjecturing that there will be differences in the Detailed Development Plan.

That also holds true with the consultation under the Fish and Wildlife Coordination Act if the use of a 6400-acre offsite tract changes the overall development and processing potential for Tract C-a.

MR. UTTER: Thanks Hal. Any additional comments?

MR. ASH: Steve, I have one comment, I was asked to put this in. Mark Bubriski of Rio Blanco County had to go to another meeting and asked me to give this as his comment on it, and this is addressed to Lee Carie and Rio Blanco as well, as kind of a question, as much as to the Panel or to the workgroup. The comment is:

"Given the interest and concern on the 84 Mesa site as a potential resource area by other industry groups, will BLM give consideration in their EA to certain 'diligence criteria' in the 84 Mesa proposal, and possibly put a time limit on 84 Mesa to be utilized so as not to tie that particular piece of land up indefinitely."

That's Mark's comment.

MR. WATSON: If I could just add to that comment. I was taking a telephone call but as I perceived our earlier discussion there is agreement that there should be an off-site area, that we are in agreement with the off-site lease but 84 Mesa is not the best site, is that correct?

MR. UTTER: Well the group did not say 84 Mesa was not the best site. They did raise some questions about whether it was or not.

MR. WATSON: Well first let me suggest that if there is going to be an EA required that probably we should incorporate consideration of lease and land exchanges at the same time so that Rio Blanco would not be required to come back twice on what is essentially the same geographic area with data, and if we need to make a decision with respect to those two issues

that, if we need to consider those separately, fine, but if there is an EA required it should cover both issues. Then secondly, that sort of addresses the point I had raised earlier, which is if we're going to constantly run into this problem where you have some companies concerned about a resource and other companies in effect impounding that resource that might, for example, go against the amendment itself because I suspect it could be interpreted where you read that an offsite lease shall include no right to any mineral deposits, if a company utilizes that area for overburden or spent shale, that I think, constitutes taking away the availability of that resource to someone else, and that almost becomes an ipso facto use of that mineral deposit. I'm not an attorney, that's just how I interpret it. So we might indeed look at the macro picture in terms of where a variety of companies might find a mutual area for deposition of spent shale and is something that the Panel might want to consider, if indeed we want to look for an area that is least harmful environmentally and least harmful economically and perhaps look toward identifying such a site that could accommodate the needs of several projects at once. I wanted to make that a part of the record.

MR. UTTER: Thank you, Clarke.

MR. FERRARO: May I make a comment? It seems to me what you're doing, no matter where you dispose of it, providing you are disposing of it on a resource, that it's a tradeoff, it's a tradeoff of trying to get better efficiency and recovery from open pit versus some other type of

technology and then you're going to cover over - unless you can go in there with a room-and-pillar mine at some future date and then you have not excluded that resource, but if it is permanently and forever unusable or recoverable, then it's a tradeoff and then you would have to calculate the two together and that would be what your recovery is going to be.

MR. ELDERKIN: I'd like to continue that discussion a little bit. We have done an analysis of 84 Mesa under the proposed lease area. John Miley from my office did the work, and comparing the resource that would be lost on C-a if you forego an open pit mine, you would lose approximately 3 billion barrels of recoverable oil, that's not totally in place, that's recoverable. (John, in case I misquote anything, you jump up and correct me.) The resource lost on 84 Mesa due to piling an average of 700-foot overburden would be approximately 8.4 percent of the recoverable resource. That figures out to about 0.9 billion barrels. So you would have a net loss, if you precluded the option of open pit on C-a, of approximately 2 billion barrels of oil that would be recoverable under present technology.

MR. MADSEN: I have a question. Yesterday industry said that you couldn't mine 84 Mesa by itself, that pit slopes would preclude an open pit operation, and they also said that they anticipated that it's possible that C-a could be the beginning of a gigantic open pit that would go across the basin going to the south and east. Why couldn't they go to the north and east, as well as the south and east, and recover the resources under 84 Mesa totally as they would with an open pit of that type?

MR. ELDERKIN: If you recall that slide that C-a had up yesterday, most of 84 Mesa overburden exceeds a thousand feet, and I'm referring to the proposed lease area. As to your question whether the pit could move northwest or southeast, the big reason for it going southeast at this time, and correct me if I say something wrong, Dick, is strictly economic. The northwest corner of C-a is the shallowest overburden. It actually outcrops, the oil shale does. There is an average overburden on the proposed initial pit site of 200 feet, I believe it is, average depth. Therefore you could get into the resource quicker there than any other place on tract. You could start a return on your initial investment. But if you start there then that means you have to move southeast across the tract with that particular pit. So I am not sure how you would get the pit to moving northwest. If you move northeast, then you would be moving into the very deep overburden there. John, do you want to answer that?

MR. DONNELL: You have in that area something like 1,000 feet of oil shale that averages around 30 gallons per ton, which is considerably richer than the resource under Tract C-a. Admittedly you have considerably more overburden. I agree that probably the minimum overburden on the 84 Mesa is about a thousand feet and it probably goes up to 1200 feet or something like that. However, if you do have a high wall adjacent to it I don't see any reason why on earth you couldn't continue the operation on to the Mesa. And one other point I'd like to bring up while I'm here, and I don't want this to be considered that I am acting as a shill for Marathon, but Marathon does have unpatented claims in Big Duck Creek, and you have the entire Mahogany ledge exposed there, which is probably even a better place to start an open pit than Tract C-a. Unfortunately, the legal situation is such that they are not

able, even if they wanted to, to go in there and start mining right now. But we have to consider (fire siren goes off!) Are these inflammatory remarks? We have to consider the development of the basin as a whole, and if it's found that oil shale is indeed economic and probably open pit mining is the way to go, in a whole swath of land that parallels the Cathedral Bluffs, including the Big Duck Creek area and the logical expansion of the Big Duck Creek area is right down the creek which would lead into the 84 Mesa area as well and possibly a coalescence that sometime in the future the Tract C-a open pit and an open pit that comes from Big Duck Creek would include that whole area, including 84 Mesa. I would hate to inhibit the recovery of the resource under 84 Mesa purely because this is a waste disposal site when you do have other options, and in fact, it bothers me to even consider solid waste disposal on any oil shale land in the Piceance Creek Basin, when you do have lands over on the west side of the Cathedral Bluffs. And the Spring Creek area is mentioned as well, I'm kind of leary about the Spring Creek area as well as the people in Rio Blanco because it has a large drainage and if you get a 100-year event there could be serious damage. However, those creeks just over to the west of the Cathedral Bluffs headwater right at the Cathedral Bluffs and don't have a large drainage area and you wouldn't be susceptible to floods that you would in Spring Creek or some of these other areas. That's all I have to say.

MR. ASH: I want to give Rio Blanco time to respond to some of these concerns, and we will try to break for lunch soon. Howard, did you want to say something?

MR. EARNEST: I want to speak on one point that I think is important. Everybody recognizes up front that 6400 acres is a politically arrived at figure. It has no basis in engineering fact. The request for the acreage that was used as a basis for negotiations between the various members of the legislative bodies, was considerably more than 6400 acres on the side of what is really required, as our discussion yesterday showed, that the 6400 acres will really only accommodate about 50 percent of the Tract C-a requirements, and we obviously would not have asked for this as a total for ever and ever type of thing. The figure was arrived at because there were members of the Senate who felt that no acreage was justified and there were others who felt that it was significantly more. Sixty four hundred acres was a convenient number. I cannot tell you whether it was just a multiple of 10 times a section or whatever it may be, the acreage is not adequate, it was never intended to be adequate, and the limitations were political or legislative and not engineering or operationally based.

The area that we are looking at initially will accommodate about 4.3 billion. The entire 84 Mesa will approach 6 billion. The total requirement as Steve mentioned is 10.5 billion cubic yards. So what we're faced with here is not the total answer. We didn't intend to imply that if we did. The issue of 84 Mesa as a resource being denied access by others we will pursue after lunch because that one could take a considerable period of time.

One other brief comment relative to one of the group's concerns was the water quality issue relative to backfilling in the pit, and the approach here would have to be one of a permeable buffer between the pit wall and the backfilled retorted shale which would allow for the diversion of any inflowing ground water around the backfilled material and collected and handled as the water would be if there were no backfilling taking place. I think it's time for lunch.

MR. ASH: Any other comments or questions before we break? Lee Carie

MR. CARIE: A couple of quick comments. One for Steve and I think the other for Clarke. Steve, on your Recommendation No. 4, what are the plans to prevent ground water pollution from spent shale in the backfilling? Actually that will be covered in the DDP on the C-a tract, and it's probably not germane or at least would be beyond the scope of the offsite lease.

MR. UTTER: Well the reason we brought this up is because it looks like part of the overall disposal plan, so we thought we should look at it.

MR. CARIE: Yes, it does need looking at. What I'm suggesting is that we look at it at the DDP stage of the tract itself and not in detail or in depth - no pun there! In the offsite lease.

MR. UTTER: That's agreeable.

MR. CARIE: Then, Clarke, on your comment as to doing a combined EIS, we don't have the data or the information even yet to make that kind of a decision, and I'm wondering if the Panel could, if that would be a proper recommendation for the Panel because they don't have the information either on how we would handle the exchange proposal at this time. We're still working on that.

MR. WATSON: I understand that, but I mean conceptually, even though we don't have specific data, when we get to that point I think we would favor trying to kill two birds with one stone, which is to say when the EIS is done or the EA, whichever suits our purposes, or your purposes, that we try and include both those considerations, whatever land exchanges are going to occur plus the off-site tract.

MR. ASH: Okay, I think we could probably go on for a couple of hours, but I think it would be good to break for lunch now and we'll reconvene promptly at 1:00.

Meeting recessed at 11:30 a.m.
Reconvenes at 1:05 p.m.

MR. ASH: I would like to reconvene this thirty-eighth meeting of the Oil Shale Environmental Advisory Panel. Before we go back to the offtract issue, Larry has put together a draft memo on the retort abandonment question and I would like to have him run through that now and see if there are any problems with it by members of the Panel, and see if we can agree on that advice.

MR. SVOBODA: I'll just go ahead and read the memo.

"The Panel has reviewed the MIS retort abandonment plan prepared by the Rio Blanco Oil Shale Corporation. The Water Supply and Quality Workgroup of the Oil Shale Environmental Advisory Panel has met and discussed several significant issues pertaining to the retort abandonment plan. Based on their review, the Workgroup has presented to the Panel the following recommendations for your consideration prior to final approval of the retort abandonment effort. These recommendations have been endorsed by the full OSEAP Panel. (I should have prefaced this by saying that this is a draft memo from Henry Ash to Bob Elderkin.)

1. Water quality monitoring. In general, there is concern about the reliability and accuracy of the groundwater model used in the plan to predict concentrations of leachate constituents at various points both on tract and at the tract boundary. OSEAP believes that additional monitoring wells should be developed to detect and monitor presence and migration of leachate away from the retort and mine area. Accordingly we recommend (a) a monitoring well in the immediate area south of retort 1, (b) a hard-rock well immediately adjacent to and south of the East Retention Pond, (c) an array of wells in the general down-gradient location of the retort. These wells should be located in the general vicinity of the ROM storage area as described in Figure 1 of the plan. The exact locations of these

wells should be determined by the apparent direction of leachate movement as indicated by the close-in monitoring wells near the retort. The Area Oil Shale Office along with the OSEAP and/or interested agencies should participate in the process of selecting both the number and location of wells necessary to monitor the leachate plume away from the mine site. (d) an existing monitoring well to the east of the retort should be reactivated, (e) Sampling and analysis for trace organic constituents in retort water and leachate should be performed at least semi-annually, and (f) a quality assurance program be developed for the abandonment plan monitoring and be disseminated to the OSEAP and interested agencies for information and review.

2. Transfer of water to the East Pond. The Panel recognizes the need to transfer water to the East Pond as part of the retort abandonment plan. Therefore we recommend your approval of the transfer of water to the clay-lined East Pond with two conditions: (a) the highest quality water, presumably from Phase 3 ponds, should be moved to the East Pond, and (b) remove the water from the East Pond as soon as possible.

3. Leaching effectiveness. There are several questions relating to the leaching ability of recirculated saturated water. The research on which Rio Blanco Oil Shale Corporation predicts effective leaching is based on injection of clean water for each pore volume change. Consequently, the Panel believes that the Area Oil Shale Office and Rio Blanco should evaluate carefully the quality of the flooded retort water after the leaching phase. Based on the quality of the post-leaching retort water, compared with earlier data, a determination should then be made on subsequent actions, including the possibility of additional leaching.

4. UIC Permit. Rio Blanco Oil Shale Corporation is aware of the high probability of a requirement for them to obtain an underground injection control permit from the U.S. EPA or Colorado State Department of Health, when a specific program for Colorado is finalized. It will not be possible to secure such a permit until early 1984, at the earliest. However, it appears that the Rio Blanco Oil Shale Corporation can proceed with their abandonment plan immediately but will be required to

obtain a Class 5 well permit after the EPA's regulations go into effect in 1984.

5. Threshold values. There is a general consensus that the threshold impact values proposed by the Rio Blanco Oil Shale Corporation are too high. Unfortunately the workgroup did not have sufficient time to determine what a more acceptable level of protection might be. The workgroup did feel, however, that the levels should be lower to insure less impact on the on-site and offsite groundwater. We recommend that you carefully evaluate

luate the appropriateness of the RBOSC's proposed impact values and develop criteria which will reduce the impact on the groundwater resource. The OSEAP has not had an opportunity to consider at Rio Blanco's request the appropriateness of their approach in protecting their proposed water uses."

MR. ASH: Thank you, Larry. Comments, suggestions from the workgroup or other Panel members on that? Reaction from the Oil Shale Office? Bob Elderkin

MR. ELDERKIN: I think that pretty well dovetails with our feelings. I see no problems.

MR. ASH: Okay, if I hear no objection we will adopt that as the Panel's advice memo on this matter, and thank you for your work, Larry, and the members of the workgroup. We appreciate that.

Returning then to the consideration of the off-tract matter, I will again turn it back to Steve Utter for I think an addendum and then Rio Blanco wants to respond to some of these concerns and things raised earlier.

MR. UTTER: As a part of our input to Hank, I propose to have this paragraph in addition to what I mentioned this morning:

"In conclusion, the Rio Blanco Workgroup suggests that when additional information is available and the environmental assessment of the proposed off-tract plant siting, overburden, and spent shale disposal is completed by BLM, White River Resource Area, of the Craig District, that the Oil Shale Environmental Advisory Panel be given the opportunity to review the proposed action."

MR. ASH: Comments from the members on that addendum or on Steve's general approach to this advice memo?

Okay, I would like to ask Dick Lieber then to give us his thoughts and comments on these matters.

MR. LIEBER: Thank you, Hank. I'd like to first address perhaps one comment that will go from the lighter to the heavier! One comment that Mark Bubriski brought up, and that was with regard to asking for some sort of a diligence requirement on the off-tract land. We certainly of course would be against such a restraint, we feel it would be completely unfair and not in accord with what was the intent of Congress when they passed the legislation. There's no

need for a diligence requirement on our offtract dump. Our diligence requirements are on the lease, and we have the diligence requirements that have been set for us, and you know it would make absolutely no sense to say you can have a lease but you have to start dumping on it before you have to start mining over here. So it seems to us that there is absolutely no foundation for any sort of a diligence requirement. It should just basically go along with the lease and the diligence requirements that we have for execution of our lease provisions.

Now with regard to the DARE report which was brought up, and the request for an update on the DARE report. We probably should have mentioned in our presentation and we didn't do it, but we have updated that DARE report. We did put together a team of experts within our respective companies, and this was done about a year and a half ago, in the fall of '81, and went through all of these criteria that were used in the original DARE report and we really essentially confirmed the original conclusions. Now we have a report on that, and we would be happy to make that memorandum available to you all to read and to look at. However, I think the main point that we want to get across here is we invite your study of this situation. We feel very confident of our conclusions that when you go all through this you'll find that 84 Mesa is environmentally the best place for the location of a dump, so we would be glad to make available that update to you and we invite your further study of it on your own.

MR. ASH: In response to that, we would welcome that, and what I would propose to do is we've got a copy or two of the DARE report, we will get it copied and provide all the Panel members then with it, and we have had a lot of changes since then, and many members have not seen that original report. We'll get that copied and then add your additional material to it and provide it to all the Panel members.

MR. LIEBER: Yes, I wish we had mentioned that in our presentation that we did go through this because we too felt the DARE report was prepared at a time when we did not have our baseline studies complete, and we have collected a lot of environmental information in the intervening years and we wanted to make sure that the conclusions were still valid that we got at the time of that report, and in our minds we came to that conclusion even after the review.

Now with regard to covering up the resource on 84 Mesa, which I think seems to be a major concern here. I think we all know that in the Green River Formation there's about 1.8 trillion barrels of reserves, and about 600 billion barrels of those are estimated to be recoverable. What some of you may not know is that about 100 billion barrels of those reserves are estimated to be recoverable by open pit mining, and that's as defined as within that 1,000-foot contour which you all looked at in our slides yesterday. Now for your information, that 100 billion barrels would be equivalent to the present U.S. production of oil for about 30 years, at the present daily total U.S. production of oil for about 30 years. So there is not a dearth of resource available for open pit mining. I'm not suggesting in any way that we should waste any resource that we have, but I think it is worthwhile to put things into proper context and to really understand that we're not covering up one of the last open-pit opportunities out here. There are a lot of open pit reserves even within that 1,000-foot contour which some of you may question.

Now the other point I'd like to make is that the 1,000-foot overburden line was not determined by us. This was done by others, it's not our line, it's not what we're saying is open-pittable and what is not, it was done by others, and you may want to argue I'm sure that everyone would agree there's no clearcut cutoff point, and if you had the study done again maybe it would change a little

bit, but 84 Mesa is clearly well over the 1,000-foot overburden, and my understanding is that it averages about 1250 feet of overburden, or 250 feet more than that cutoff line that has been chosen previously by others.

Now with regard to the economics, and I think this is important and a point that needs to be brought out. What we're trying to do is to make a lease commercially viable that only has 480 feet of overburden on it. We're not talking about 1200, we're talking about 480 feet, and frankly we find that this is very difficult to do under the present circumstances today. I'd like to also point out there were some questions brought up with regard to where an open pit should start and this type of thing. Tract C-a was nominated by industry and it was generally felt by everyone at the time that that was the best place to start an open pit. So Tract C-a didn't just occur by chance, it was after a great deal of study of open pit parameters that Tract C-a was chosen. Now one of the objectives of the prototype program is to permit an equitable return on resource, and that's clearly stated as one of the objectives of the prototype program, and I think you heard yesterday that from our point of view, over the life of a project there could be \$1.4 billion additional expense to a project if we would have to take that overburden over to Cathedral Bluffs. I think that's a significant amount of money, and if it turned out that that amount of extra burden to a project meant that open pit mining was not commercially attractive and it did indeed, I'm not saying it would, because we haven't analyzed this, but if it were to force us then to underground mining, then we would lose on Tract C-a, a potential 3 billion barrels of reserve. So I think these are the points that we would like you all to consider. Basically yes, you may, make it a little more difficult for open pit mining of 84 Mesa in the future, it's not impossible, but what we're talking about is trying to get any kind of open pit mining going today, and we're finding it is very difficult to do and any actions which are taken which further encumber the economics of this project I think could be very serious for us. Thank you.

MR. ASH: Thank you, Dick. Paul

DR. KILBURN: Dick, one followup question on the economics. Could that be broken out by barrel of oil, 1.4 billion, how much would that add to the cost of a barrel of oil, for example, ? might be a pertinent figure.

MR. LIEBER: If we recovered the total tract, and the total 5 billion barrels of oil that it is estimated are recoverable roughly, from our tract, with open pit mining, that would add 25¢ a barrel to the price.

MR. ASH: Other comments or questions, or further discussion on this off-tract matter? Steve, do you want to review for us what's in your memo, what we'd be saying to - and this we would direct to Lee as the District Manager certainly, and also recognizing we're not going to resolve this question today, or by our memorandum probably next month either.

MR. UTTER: Okay. Well I'll reread the note here, it isn't very long. The group agrees that an offtract lease should be let for disposal of overburden and spent shale. However, on the basis of the information available we

are not certain that the proposed 84 Mesa site is best from an environmental viewpoint. Therefore we recommend that a decision on an off tract site be deferred until more information is available. Factors that should be thoroughly investigated include but are not limited to (1) future recovery of the mineral resource underlying the proposed disposal tract or tracts, (2) the applicability of the DARE evaluation, which is about 8 years old, to the tract selection today. Are the environmental criteria weights the same now as they were in 1975? (3) a long-term consideration of the disposal of all of the some 10.5 billion cubic yards of overburden and spent shale. At present an estimated 5.2 billion cubic yards can be handled, and (4) plans to prevent groundwater pollution from backfilled spent shale in the pit. So in conclusion the workgroup suggests that when additional information is available, and when the environmental assessment of the proposed off-tract plant siting overburden and spent shale disposal is completed, that the Panel be given the opportunity to review the proposed action.

MR. ASH: Thank you, Steve. Comments or suggestions on that proposed memo from the members? Lee

MR. CARIE: Just a small comment. You can address that to Curt Smith, his staff is doing work on that, that will cause me less work.

MR. ASH: Well our charter says we advise you.

MR. WATSON: I have a problem with that "however clause" and I'll just renew that concern. I think Dick Lieber pointed it out when he mentioned that one of the obligations is to permit an equitable return on the project, so it seems to me inadequate to say that we don't like 84 Mesa yet we seem stymied in terms of coming up with what is an equitable solution which goes toward maintaining the objective of an equitable return on the investment. I don't think we've had sufficient discussion on that, we just kind of leave the issue hanging in the air. That stymies their planning and it certainly doesn't leave me feeling - well, where are we going with the whole issue?

MR. ASH: I don't think the memo says we "don't like" 84 Mesa. It says we, the Panel, are not sure about 84 Mesa and the delay I think envisioned is not one of years but a matter of months till the EA is done for one thing, and there's been further consideration of it.

MR. WATSON: But are we opening in a sense a Pandora's box - it seems to me 84 Mesa was pretty specific in the minds of the members in committee of Congress when they were considering the whole issue. They weren't just looking at it in a blanket sense. I think they were pretty specifically considering 84 Mesa as the site. Now I could be wrong, I don't know. Rio Blanco was there.

MR. ASH: I would defer to any information they might have on it. I inquired of Washington if there was legislative history to that proposal which might have addressed location, because I have been well aware that the questions would come up on 84 Mesa - I wasn't able to determine whether that authority was

intended to be at all site-specific or not. Perhaps Rio Blanco might have some information on that. I'm sure you all testified at more than one hearing back there.

MR. LIEBER: Yes, we have testified numerous times and we have made presentations on the requirement for off-tract lands. In all the presentations that we made we always used 84 Mesa as the example. I cannot tell you in all honesty that you'll find a legislative history which would indicate an intent necessarily by Congress to give us 84 Mesa, but in all of our discussions with regard to offtract land they were always based on 84 Mesa and the presentations, etc., were always given using 84 Mesa.

MR. CARIE: In the analyses that we're doing we're not locking ourselves into 84 Mesa. We're going to be looking at alternatives. 84 Mesa is the proposed action so far, but we by no means are precluding other sites or modifications of that site.

MR. FERRARO: Clarke, I don't see that the Panel has to concur with 84 Mesa today. We've got a document to review down the road and react to the document with the recommendations from BLM, so I would think the way the memo is that Steve put together with his workgroup seems to be an acceptable approach at this time for us.

MR. UTTER: I'll reread it: The group agrees that an offtract lease should be let for disposal, etc. However, on the basis of the information available we are not certain that the proposed 84 Mesa site is best from an environmental viewpoint.

MR. WATSON: Okay. Could we perhaps amend the language to say "However, we would like to look at other sites as well." That way we take out the potentially negative perception that other readers might have.

MR. FERRARO: Well, we're not going to look at it - you're going to ask BLM to look at it, which they are going to be doing anyway,

MR. WATSON: Well then it becomes a part of a written record it can have interpretations. Could we just say that we'd like to look at other sites as well as 84 Mesa, in terms of their environmental concerns?

MR. ASH: In terms of our advice, it may be, as Paul is suggesting, more appropriate to say that we think other sites should also be considered, that is, that BLM consider them, and then you're going further to say that we hope to see the results further information, of your analysis.

MR. HANSEN: Let's say it this way: However, on the basis of the information available we are not certain what site is best from an environmental viewpoint.

MR. UTTER: The problem is that we were asked to look at 84 Mesa. That's in the proposal.

MR. ASH: Well, do we have a consensus, do we have any objections to going ahead with this memo pretty much as it is, we'll work with that language a little bit more and I'll talk to the key parties before we put in a memo, those of you that have expressed particular concern in that area. Is that agreeable to the Panel? Okay, we shall do that. And I thank you, it's an issue I'm sure that could get somewhat controversial and could be debated

with some vigor and might get people upset. I think everybody's shown remarkable restraint. We recognize that we are not going to make the final decision today, and the Panel doesn't have that authority in any case. We are only advisory. I hope our debate and discussion of these issues is indeed constructive and helpful to both industry and to the Bureau of Land Management and the Department of the Interior.

We have essentially completed all the work that was on our agenda for this meeting. I would like to ask if there is any other business or matters that should come before the Panel? I would raise a question myself Lee, to you, on the proposed exchange. It's a question or suggestion. I would like to know if we are going to see that proposal through the Panel, if we will have a chance to look at it? I think it would be good if we had that before us before we go any further on comments on the offtract issue. Can you tell me anything on that?

MR. CARIE: Yes, it's a public document. I can get copies to you, Hank, and you can mail it out to the Panel. I'm not sure yet what advice I will be seeking from the Panel, but again going to the roll of the ROST Team and the OSEAP, I would certainly hope that the Panel could address some of the environmental impacts or the environmental consequences of whatever action we come up with. I don't know what our action is going to be yet is my problem.

MR. ASH: Okay. Hal

MR. BOEKER: Lee, will the land exchange result in the need for an environmental assessment process?

MR. CARIE: Yes, very definitely, if we go ahead with the exchange. If there is a Federal action, significant action, yes, then we have to meet all the NEPA requirements. If there is no exchange, of course there would be no need for a NEPA requirement.

MR. ASH: At what point does the EA or whatever come?

MR. CARIE: That point, Hank, would come when we have a viable action before us, and I don't know exactly what time that will be. We've got to go through some preliminary steps to see if the exchange is a viable process.

MR. ASH: Well I wasn't trying to put you on the spot, or maybe I was, but I was just trying to see how this would fit in with what else we may be doing in the next few months on this issue in general.

MR. CARIE: That's a good question. We are wrestling with that ourselves. We don't know how this is going to dovetail, if at all, in with the offsite

lease. Certainly, they are in the same area, they are contiguous, at least as presented. I don't know when we will be ready to analyze the environmental impacts of the exchange.

MR. ASH: Okay, Steve

MR. UTTER: Okay. Clarke and I have come up with a revision to the revision. It reads as follows: However, on the basis of the information available, we recommend that other sites in addition to the proposed 84 Mesa site be

considered to determine which are best from an environmental viewpoint.

MR. ASH: Sounds good. Hearing no objection the revision to the revision is accepted as read.

I would like to offer this opportunity for any comments from the audience that we offered earlier this morning. Hearing none, the only other matter that I have to mention at all, would be the timing of our next meeting, and based on the proposed timetable or schedule that Cathedral Bluffs reported to us yesterday it would appear that a Panel meeting early in January would be likely, when we will be looking at their draft revised DDP. It seems to me we were at this point about two years ago, and somehow we never got to that point. I hope that we make it this time.

Any other matters to come before the Panel, comments, questions from the members?

MR. JOHN: Do you happen to know whether there are earlier planes to Denver than the 4:30 plane? There were several others seeking that same information.

MR. ASH: There's one at 2 something, I don't know just what time. Frontier mentioned a 2 something flight. Any other burning issues?

MR. WATSON: Well I'd certainly like to thank our Chairman for such wonderful accommodations and I think in the absence of Elanor you did an excellent job.

MR. ASH: Thank you, Clarke. I will now adjourn this thirty-eighth meeting of the Oil Shale Environmental Advisory Panel, and thank you all for coming.

Meeting adjourned at 1:42 p.m.

